

Monitored Natural Attenuation Monitoring – December 2019 OMC Plant 2 Site (OU4), Waukegan, Illinois WA No. 237-RARA-0528/Contract No. EP-S5-06-01

PREPARED FOR: Sarah Rolfes/U.S. Environmental Protection Agency (EPA)
PREPARED BY: CH2M HILL, Inc. (CH2M)
DATE: April 3, 2020
PROJECT NUMBER: 696001.CV.01
REVISION NO.: 0

Introduction

This memorandum documents the field activities and results associated with the monitored natural attenuation (MNA) groundwater sampling conducted in December 2019 at the Outboard Marine Corporation (OMC) Plant 2 Site (Operable Unit [OU] 4) in Waukegan, Illinois. Injections were conducted in April and May 2018 and included the treatment of two trichloroethene (TCE) hotspot and three lower-concentration source areas shown in Figure 1. The work is pursuant to Technical Direction Memorandum No. 1 received from EPA (dated July 17, 2017) authorizing a second injection event and pre- and post-injection monitoring to evaluate the performance of the treatment and the MNA sitewide remedy. As specified in EPA's Record of Decision (EPA 2009), the overall remedial action objective for the groundwater remedy is to reduce the concentrations of the chemicals of concern (TCE, cis-1,2-dichloroethene [cis-1,2-DCE], and vinyl chloride) to levels that would allow the groundwater to be used for residential purposes without restrictions.

The monitoring wells in the performance and sitewide well networks and analysis to be performed as part of the monitoring program were documented in the *Quality Assurance Project Plan Addendum III Letter* approved by EPA on April 5, 2019 (CH2M 2019).

Field Activities

The MNA groundwater sampling event was conducted from December 2 to 6, 2019, and included the following:

- Collected depth to water, water quality measurements, and groundwater samples from 34 performance monitoring wells and 29 sitewide monitoring wells. The sitewide wells include the 10 wells (well nests ST-MW1, ST-MW2, ST-MW3, ST-MW4, and ST-MW5) installed by SulTRAC around the polychlorinated biphenyl (PCB) containment cell and 6 wells (nests MW-3, MW-11, and MW-516) located on the Larsen Marine Services property. Table 1 and Figure 1 show the monitoring well locations.
- Managed groundwater purge water in 5-gallon buckets, and temporarily stored water in tanks and then treated it by the onsite water treatment system.
- The locations (63 locations) were sampled for analysis of volatile organic compounds (VOCs), dissolved metals (arsenic, iron, and manganese), and the MNA parameters (alkalinity, anions

[chloride, nitrate, nitrite, and sulfide], dissolved gases [methane, ethane, and ethene] and total organic carbon [TOC]). Twenty-one of the 63 locations were also sampled for PCB analysis. The 21 locations sampled for PCBs included the 10 SulTRAC monitoring wells and 11 sitewide monitoring well locations along the eastern and southern site boundaries, which were previously approved by EPA. Figures 2a and 2b show the contaminant distribution based upon the total detected concentrations of TCE, cis-1,2-DCE, and vinyl chloride in the shallow and deep portions of the aquifer.

Groundwater Sampling

Groundwater samples were collected using low-flow methods as described in the quality assurance project plan (CH2M 2013). The monitoring wells were purged until the field parameters (temperature, specific conductance, dissolved oxygen, pH, oxidation reduction potential, and turbidity) were stable based on readings from a YSI multi-parameter flow-through cell. The low-flow parameters were recorded for each well (Attachment 1). Figures 3a and 3b show the water level elevations for the shallow and deep portions of the aquifer.

Samples requiring VOC and PCB analysis were submitted to a laboratory within EPA's Contract Laboratory Program, while MNA samples were sent to Katahdin Analytical Services of Scarborough, Maine.

Waste Management

Purge water from the sampling was containerized and treated by the water treatment system related to the onsite consolidation facility.

Personal protective equipment was doubled-bagged and placed with the general waste from the site for disposal.

Data Management and Evaluation

The field sample data were entered into EPA's Scribe software. The data were used to create chain-of-custody forms and for tracking purposes.

Following sample analysis, the Contract Laboratory Program laboratory transmitted the analytical data and supporting documentation to EPA for validation, after which, an electronic analytical report and an electronic and hard-copy validation reports were sent to CH2M. Following EPA's data validation, the CH2M project chemist reviewed the validation summaries and entered the qualifiers into the project database. Attachment 2 contains the data usability evaluation technical memorandum.

Analytical Results

Table 2 shows stabilized field parameter results for samples collected in December 2019. Table 3 contains analytical laboratory results for VOC, PCBs, dissolved metals, dissolved gases, TOC, and the MNA parameters.

Conclusions and Recommendations

The analytical results for TCE, cis-1,2-DCE, and vinyl chloride are relatively similar to the previously collected data from September 2019. The groundwater quality and analytical results from the previous monitoring (April 2014 through December 2016), March 2018 pre-injection, and August 2018 post-injection sampling event can be compared to evaluate the effectiveness of the supplemental treatment. CH2M recommends continuing quarterly groundwater performance monitoring with the purpose of evaluating the overall performance of the enhanced in situ biodegradation and in situ chemical reduction treatment in reducing chlorinated VOC concentrations in the groundwater.

References

CH2M HILL, Inc. (CH2M). 2013. *Quality Assurance Project Plan, Revision 2, OMC Plant 2 Site, Waukegan, Illinois. WA No. 105-RARA-0528, Contract No. EP-S5-06-01.* March.

CH2M HILL, Inc. (CH2M). 2019. *Quality Assurance Project Plan Addendum III Letter, OMC Plant 2 Site, Waukegan, Illinois. WA No. 237-RARA-0528, Contract No. EP-S5-06-01.* April.

U.S. Environmental Protection Agency (EPA). 2009. *Record of Decision, Outboard Marine Corporation Superfund Site, Waukegan. Lake County, Illinois.* February.

Tables

Table 1. Summary of Well IDs and Analytes for MNA Groundwater Sampling - December 2019

Monitored Natural Attenuation Monitoring - December 2019

OMC Plant 2 Site (OU4), Waukegan, IL

Well Number	FD	MS/MSD	VOC	PCB	Dissolved Gases ^a	Dissolved Metals ^b	MNA ^c	Date Collected	Notes
MW-11D	X		X		X	X	X	12/3/2019	Located in Larsen Marine property
MW-11S			X		X	X	X	12/3/2019	Located in Larsen Marine property
MW-3D			X	X	X	X	X	12/3/2019	Located in Larsen Marine property
MW-3S			X		X	X	X	12/3/2019	Located in Larsen Marine property
MW-501D			X	X	X	X	X	12/3/2019	
MW-501S			X	X	X	X	X	12/3/2019	
MW-513D			X		X	X	X	12/3/2019	
MW-513S			X		X	X	X	12/3/2019	
MW-516D		X	X		X	X	X	12/2/2019	Located in Larsen Marine property
MW-516S			X		X	X	X	12/2/2019	Located in Larsen Marine property
MW-528D			X		X	X	X	12/4/2019	
MW-528S			X		X	X	X	12/4/2019	
MW-600D			X		X	X	X	12/6/2019	
MW-600S			X		X	X	X	12/6/2019	
MW-601D			X		X	X	X	12/2/2019	
MW-601S		X	X		X	X	X	12/2/2019	
MW-602D	X		X		X	X	X	12/4/2019	
MW-602S			X		X	X	X	12/4/2019	
MW-603D			X		X	X	X	12/5/2019	
MW-603S			X		X	X	X	12/5/2019	
MW-604D			X		X	X	X	12/6/2019	
MW-604S			X		X	X	X	12/6/2019	
MW-605D	X		X		X	X	X	12/5/2019	
MW-605S			X		X	X	X	12/5/2019	
MW-606D			X		X	X	X	12/6/2019	
MW-606S			X		X	X	X	12/6/2019	
MW-607D			X		X	X	X	12/4/2019	
MW-607S			X		X	X	X	12/4/2019	
MW-610D			X	X	X	X	X	12/3/2019	
MW-610S			X	X	X	X	X	12/3/2019	
MW-612D			X		X	X	X	12/6/2019	
MW-612S	X		X		X	X	X	12/6/2019	
MW-613D			X	X	X	X	X	12/5/2019	
MW-613S			X		X	X	X	12/5/2019	
MW-614D			X		X	X	X	12/5/2019	
MW-614S			X		X	X	X	12/5/2019	
MW-615D			X		X	X	X	12/4/2019	
MW-615S			X		X	X	X	12/4/2019	
MW-619D			X		X	X	X	12/3/2019	
MW-619S			X		X	X	X	12/3/2019	
MW-620D			X		X	X	X	12/4/2019	
MW-620S			X		X	X	X	12/4/2019	
MW-621D			X		X	X	X	12/6/2019	
MW-621S	X		X		X	X	X	12/6/2019	
MW-623D			X	X	X	X	X	12/3/2019	
MW-623S			X	X	X	X	X	12/3/2019	
MW-624D			X	X	X	X	X	12/3/2019	
MW-624S	X		X	X	X	X	X	12/3/2019	
W-5	X		X	X	X	X	X	12/4/2019	Co-located with MW-622S (temp)
ST-MW-1D			X	X	X	X	X	12/5/2019	SulTrac Installed Well
ST-MW-1S			X	X	X	X	X	12/5/2019	SulTrac Installed Well
ST-MW-2D		X	X	X	X	X	X	12/4/2019	SulTrac Installed Well
ST-MW-2S		X	X	X	X	X	X	12/4/2019	SulTrac Installed Well
ST-MW-3D			X	X	X	X	X	12/5/2019	SulTrac Installed Well
ST-MW-3S			X	X	X	X	X	12/5/2019	SulTrac Installed Well
ST-MW-4D			X	X	X	X	X	12/5/2019	SulTrac Installed Well
ST-MW-4S			X	X	X	X	X	12/5/2019	SulTrac Installed Well
ST-MW-5D			X	X	X	X	X	12/4/2019	SulTrac Installed Well

Table 1. Summary of Well IDs and Analytes for MNA Groundwater Sampling - December 2019*Monitored Natural Attenuation Monitoring - December 2019**OMC Plant 2 Site (OU4), Waukegan, IL*

Well Number	FD	MS/MSD	VOC	PCB	Dissolved Gases ^a	Dissolved Metals ^b	MNA ^c	Date Collected	Notes
ST-MW-5S			X	X	X	X	X	12/4/2019	SulTrac Installed Well
MW-625D			X		X	X	X	12/5/2019	
MW-625S			X		X	X	X	12/5/2019	
MW-626D			X		X	X	X	12/4/2019	
MW-626S			X		X	X	X	12/4/2019	

Notes:

Field duplicates collected for every 10 samples and MS/MSD for every 20 samples.

One field blank and one equipment blank collected.

^a Dissolved gases include: methane, ethene, and ethane^b Dissolved metals include: arsenic, iron, and manganese^c MNA parameters include the following: alkalinity, nitrate/nitrite, chloride, sulfate, and sulfide

FD = field duplicate, ID = identification, MS/MSD = matrix spike/matrix spike duplicate, MNA = monitored natural attenuation, PCB = polychlorinated biphenyl, VOC = volatile organic compounds

Table 2. Field Parameters, December 2019
Monitored Natural Attenuation Monitoring - December 2019
OMC Plant 2 Site (OU4) - Waukegan, IL

		MW-003S	MW-003D	MW-011S	MW-011D	MW-501S	MW-501D	MW-513S	MW-513D	MW-516S	MW-516D	MW-528S	MW-528D	MW-600S	MW-600D	MW-601S
		12/03/2019	12/03/2019	12/03/2019	12/03/2019	12/03/2019	12/03/2019	12/03/2019	12/03/2019	12/02/2019	12/02/2019	12/04/2019	12/04/2019	12/06/2019	12/06/2019	12/02/2019
Depth to Water	ft btoc	3.75	3.48	3.81	3.82	2.49	2.41	1.77	1.8	0.85	0.95	3.11	3.01	3.39	3.47	3.35
Dissolved Oxygen	mg/L	1.33	2.43	0.37	1.89	0.22	0.27	3.73	0.52	0.25	0.78	8.92	9.41	0.15	2.6	0.24
Electrical Conductivity	mS/cm	0.281	5.73	1.023	1.542	0.509	0.575	0.796	1.168	0.745	8.015	0.471	1.139	0.762	1.85	0.854
Flow Rate	mL/min	220	225	240	250	300	300	240	250	260	225	250	250	325	225	400
Oxidation Reduction Potential	mV	156.9	-149.2	17.8	-121.1	-83.1	-150.1	61	38.4	163.2	-138.9	177.9	115.7	4.7	199.6	-112.7
pH	pH units	6.84	7.25	7.13	7.15	7.29	7.52	7.09	7.24	7.11	7.31	7.76	7.08	7.11	7.05	7.41
Temperature	°C	7.97	10.32	8.03	9.32	7.24	10.17	9.34	11.11	8.98	11.76	8.55	11.05	9.03	10.33	8.15
Turbidity	NTU	1.9	0	0.8	4.5	1.6	0	0	6.2	0	0	0	2.1	0	0	0

Notes:
°C = degrees Celsius
ft btoc = feet below top of casing
mg/L = milligrams per liter
mL/min = millimeters per minute
mS/cm = milliSiemens per centimeter
mV = millivolts
NTU = Nephelometric turbidity units

Table 2. Field Parameters, December 2019
Monitored Natural Attenuation Monitoring - December
OMC Plant 2 Site (OU4) - Waukegan, IL

		MW-601D	MW-602S	MW-602D	MW-603S	MW-603D	MW-604S	MW-604D	MW-605S	MW-605D	MW-606S	MW-606D	MW-607S	MW-607D	MW-610S	MW-610D
		12/02/2019	12/04/2019	12/04/2019	12/05/2019	12/05/2019	12/05/2019	12/05/2019	12/05/2019	12/05/2019	12/06/2019	12/06/2019	12/04/2019	12/04/2019	12/03/2019	12/03/2019
Depth to Water	ft btoc	3.22	2.8	3.03	3.15	2.73	2.6	2.78	4.31	4.31	3.91	4.25	3.44	3.15	5.56	5.55
Dissolved Oxygen	mg/L	0.17	0.23	1.31	0.23	0.5	0.13	0.86	0.15	0.79	0.1	0.97	0.11	0.63	13.57	0.3
Electrical Conductivity	mS/cm	2.247	0.537	2.583	0.439	2.997	1.04	2.857	0.712	2.677	0.658	3.31	0.373	2.126	0.989	1.275
Flow Rate	mL/min	150	240	250	280	250	400	200	425	400	450	100	375	150	240	250
Oxidation Reduction Potential	mV	-87.1	-52.2	-163.8	221.3	-51.2	-117.7	-70.7	-101	-88.4	-63.4	-91.1	-170.5	-165.3	59.3	-43.6
pH	pH units	6.42	7.29	7.43	7.33	5.89	7.05	6.17	7.14	6.11	8.14	6.51	7.95	8.03	7.58	7.2
Temperature	°C	9.49	9.25	11.85	8.37	11.17	8.6	11.26	8.93	12.82	8.09	8.54	5.11	11.06	10.54	11.48
Turbidity	NTU	2.2	0	0	0	0	3.9	7.4	3.7	3.9	1.6	4.4	3.3	0	0	1.6

Notes:
°C = degrees Celsius
ft btoc = feet below top of casing
mg/L = milligrams per liter
mL/min = millimeters per minute
mS/cm = milliSiemens per centimeter
mV = millivolts
NTU = Nephelometric turbidity units

Table 2. Field Parameters, December 2019
Monitored Natural Attenuation Monitoring - December
OMC Plant 2 Site (OU4) - Waukegan, IL

		MW-612S	MW-612D	MW-613S	MW-613D	MW-614S	MW-614D	MW-615S	MW-615D	MW-619S	MW-619D	MW-620S	MW-620D	MW-621S	MW-621D	MW-623S	MW-623D	MW-624S
		12/06/2019	12/06/2019	12/05/2019	12/05/2019	12/05/2019	12/05/2019	12/04/2019	12/04/2019	12/03/2019	12/03/2019	12/04/2019	12/04/2019	12/06/2019	12/06/2019	12/03/2019	12/03/2019	12/03/2019
Depth to Water	ft btoc	3.56	3.15	3.72	4.35	3.19	3.16	4.72	4.26	4.08	4.15	4.33	4.24	4.38	4.64	2.71	2.87	4.53
Dissolved Oxygen	mg/L	0.13	0.91	4.91	1.33	0.24	1.1	0.39	0.72	0.12	0.24	0.8	0.06	0.31	1.42	0.15	0.28	0.41
Electrical Conductivity	mS/cm	1.1	3.376	1.008	2.506	0.737	4.797	0.592	3.208	0.365	1.879	1.067	2.383	1.571	3.143	0.52	0.581	0.586
Flow Rate	mL/min	450	150	220	300	300	200	240	275	350	300	300	200	350	250	300	200	350
Oxidation Reduction Potential	mV	-115.4	-46.8	232.9	-270.9	225.8	-110.3	82.6	-194.8	-47.5	-235.4	-70.9	-349.3	180.6	204.1	-138.5	-151.7	72.2
pH	pH units	7.06	6.06	7.74	7.3	7.16	8.09	7.19	9.65	8.03	8.85	6.73	7.76	7.35	6.65	7.5	7.65	7.52
Temperature	°C	7.96	10.9	7.58	11.95	9.64	11.45	9.15	10.55	8.62	11.52	9.03	12.05	8.62	11.75	9.23	10.45	9.99
Turbidity	NTU	2.4	0.9	0	0	2.2	4.6	0.7	7.8	0	0	0	34.6	0	2.1	1.4	0	0

Notes:
°C = degrees Celsius
ft btoc = feet below top of casing
mg/L = milligrams per liter
mL/min = millimeters per minute
mS/cm = milliSiemens per centimeter
mV = millivolts
NTU = Nephelometric turbidity units

Table 2. Field Parameters, December 2019
Monitored Natural Attenuation Monitoring - December
OMC Plant 2 Site (OU4) - Waukegan, IL

		MW-624D	MW-625S	MW-625D	MW-626S	MW-626D	ST-MW-1S	ST-MW-1D	ST-MW-2S	ST-MW-2D	ST-MW-3S	ST-MW-3D	ST-MW-4S	ST-MW-4D	ST-MW-5S	ST-MW-5D	W-5
		12/03/2019	12/05/2019	12/05/2019	12/04/2019	12/04/2019	12/05/2019	12/05/2019	12/04/2019	12/04/2019	12/05/2019	12/05/2019	12/05/2019	12/05/2019	12/04/2019	12/04/2019	12/04/2019
Depth to Water	ft btoc	4.6	2.8	3.4	5.45	5.66	1.2	0.98	1.16	1.1	0.51	0.6	2.1	2.09	3.05	2.97	4.71
Dissolved Oxygen	mg/L	0.32	0.19	0.76	0.73	0.24	0.33	0.79	0.12	0.65	0.24	0.78	0.6	1.72	0.47	1.3	0.79
Electrical Conductivity	mS/cm	1.873	0.538	2.529	1.367	1.964	1.418	2.154	0.61	1.121	0.864	1.533	1.717	0.756	0.829	1.437	2.725
Flow Rate	mL/min	350	450	400	350	300	450	400	400	400	400	425	250	250	220	300	310
Oxidation Reduction Potential	mV	-140	-143.2	-97.6	-91.5	-227.2	-98.3	-75	-123.5	-116.1	-88.2	-81.3	226.1	22.3	82.8	-142	67.3
pH	pH units	7.69	7.75	8.62	7.18	7.75	7.13	6.83	7.22	6.98	7.32	7.01	7.4	7.75	7.12	7.46	7.33
Temperature	°C	11.8	8.83	11.67	10.08	11.98	12.27	13.68	9.81	12.57	11.87	13.79	12.11	13.54	11.6	14.2	10.64
Turbidity	NTU	0	7.2	9.1	5.8	0.1	0	9.8	8.5	3.8	0.7	9.2	4	6.3	6.3	0	0

Notes:
°C = degrees Celsius
ft btoc = feet below top of casing
mg/L = milligrams per liter
mL/min = millimeters per minute
mS/cm = milliSiemens per centimeter
mV = millivolts
NTU = Nephelometric turbidity units

Table 3. Analytical Results, December 2019

Monitored Natural Attenuation Monitoring - December 2019

OMC Plant 2 Site (OU4) - Waukegan, IL

Parameter	MCL ^a	Unit	MW-003S 12/03/2019	MW-003D 12/03/2019	MW-011S 12/03/2019	MW-011D 12/03/2019	MW-501S 12/03/2019	MW-501D 12/03/2019	MW-513S 12/03/2019	MW-513D 12/03/2019	MW-516S 12/02/2019	MW-516D 12/02/2019	MW-528S 12/04/2019	MW-528D 12/04/2019	MW-600S 12/06/2019	MW-600D 12/06/2019	MW-601S 12/02/2019	MW-601D 12/02/2019	MW-602S 12/04/2019	MW-602D 12/04/2019	MW-603S 12/05/2019	MW-603D 12/05/2019	MW-604S 12/05/2019	MW-604D 12/05/2019
Polychlorinated Biphenyls (PCBs)																								
Aroclor 1016	-	µg/L		0.98 U			0.95 U	0.97 U																
Aroclor 1221	-	µg/L		0.98 U			0.95 U	0.97 U																
Aroclor 1232	-	µg/L		0.98 U			0.95 U	0.97 U																
Aroclor 1242	-	µg/L		0.98 U			0.95 U	0.97 U																
Aroclor 1248	-	µg/L		0.98 U			0.95 U	0.97 U																
Aroclor 1254	-	µg/L		0.98 U			0.95 U	0.97 U																
Aroclor 1260	-	µg/L		0.98 U			0.95 U	0.97 U																
Aroclor 1262	-	µg/L		0.98 U			0.95 U	0.97 U																
Aroclor 1268	-	µg/L		0.98 U			0.95 U	0.97 U																
Volatile Organic Compounds																								
1,1,1-Trichloroethane	200	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	50 U	5 U	5 U	5 U	25 U
1,1,2,2-Tetrachloroethane	-	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	50 U	5 U	5 U	5 U	25 U
1,1,2-Trichloroethane	5	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	50 U	5 U	5 U	5 U	25 U
1,1-Dichloroethane	-	µg/L	5 U	5 U	5 U	5 U	1.6 J	7.7	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	0.85 J	5 U	50 U	5 U	5 U	5 U	25 U
1,1-Dichloroethene	7	µg/L	5 U	5 U	5 U	6.2	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	23 J	5 U	7.2	5 U	15 J
1,2,3-Trichlorobenzene	-	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	50 U	5 U	5 U	5 U	25 U
1,2,4-Trichlorobenzene	70	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	50 U	5 U	5 U	5 U	25 U
1,2-Dibromo-3-chloropropane	0.2	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	50 U	5 U	5 U	5 U	25 U
1,2-Dibromoethane	0.05	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	50 U	5 U	5 U	5 U	25 U
1,2-Dichlorobenzene	600	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	50 U	5 U	5 U	5 U	25 U
1,2-Dichloroethane	5	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	50 U	5 U	5 U	5 U	25 U
1,2-Dichloropropane	5	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	50 U	5 U	5 U	5 U	25 U
1,3-Dichlorobenzene	-	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	50 U	5 U	5 U	5 U	25 U
1,4-Dichlorobenzene	75	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	50 U	5 U	5 U	5 U	25 U
2-Butanone	-	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	7.9 U	10 U	10 U	10 U	100 U	10 U	10 U	10 U	41 J
2-Hexanone	-	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	100 U	10 U	29	10 U	50 U
4-Methyl-2-Pentanone	-	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	100 U	10 U	10 U	10 U	50 U
Acetone	-	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	6.7 U	10 U	10 U	10 U	100 U	10 U	16 U	10 U	50 U
Benzene	5	µg/L	5 U	54	5 U	5 U	5 U	1.4 J	5 U	5 U	5 U	550 J	5 U	5 U	5 U	5 U	5 U	5 U	5 U	50 U	5 U	5 U	5 U	25 U
Bromochloromethane	-	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	50 U	5 U	5 U	5 U	25 U
Bromodichloromethane ^b	80	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	50 U	5 U	5 U	5 U	25 U
Bromoform ^b	80	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	50 U	5 U	5 U	5 U	25 U
Bromomethane	-	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	50 U	5 U	5 U	5 U	25 U
Carbon Disulfide	-	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	50 U	5 U	5 U	5 U	25 U
Carbon tetrachloride	5	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	50 U	5 U	5 U	5 U	25 U
Chlorobenzene	100	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	50 U	5 U	5 U	5 U	25 U
Chlorodibromomethane ^b	80	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	50 U	5 U	5 U	5 U	25 U
Chloroethane	-	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	50 U	5 U	5 U	5 U	25 U
Chloroform ^b	80	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	50 U	5 U	5 U	5 U	25 U
Chloromethane	-	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	50 U	5 U	5 U	5 U	25 U
cis-1,2-Dichloroethene	70	µg/L	5 U	5 U	1.1 J	1700	4.4 J	9.6	5 U	5 U	5 U	5 U	5 U	5.4	5 U	1.2 J	5 U	0.95 J	1.3 J	11000	5 U	2700	110	4900
cis-1,3-Dichloropropene	-	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	50 U	5 U	5 U	5 U	25 U
Cyclohexane	-	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	50 U	5 U	5 U	5 U	25 U
Dichlorodifluoromethane	-	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	50 U	5 U	5 U	5 U	25 U
Ethylbenzene	700	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	50 U	5 U	5 U	5 U	25 U
Freon 113	-	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	50 U	5 U	5 U	5 U	25 U
Isopropylbenzene	-	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	50 U	5 U	5 U	5 U	25 U
Methyl Acetate	-	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	26	5 U	38	5 U	50 U	5 U	72	5 U	25 U
Methyl tert-butyl ether (MTBE)	-	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	50 U	5 U	5 U	5 U	25 U
Methylcyclohexane	-	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	50 U	5 U	5 U	5 U	25 U
Methylene Chloride	5	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	50 U	5 U	5 U	5 U	25 U
Styrene	100	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	50 U	5 U	5 U	5 U	25 U
Tetrachloroethene	5	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	50 U	5 U	5 U	5 U	25 U
Toluene	1,000	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	50 U	5 U	5 U	5 U	25 U
trans-1,2-Dichloroethene	100	µg/L	5 U	5 U	5 U	3.2 J	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	50	5 U	3 J	5 U	25 U
trans-1,3-Dichloropropene	-	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	50 U	5 U	5 U	5 U	25 U
Trichloroethylene	5	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	50 U	5 U	5 U	5 U	25 U
Trichlorofluoromethane	-	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	50 U	5 U	5 U	5 U	25 U
Vinyl Chloride	2	µg/L	5 U	5 U	1+ ^c	1300+ ^c	2.3 J	1.9 J	5 U	1.7 J	5 U	0.9 J	5 U	5 U	1.5 J	12	5 U	3+ ^c	1.1+ ^c	5600	1.2 J	2800	190	12000
Xylene, o ^c	10,000	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	50 U	5 U	5 U	5 U	25 U
Xylenes, m & p ^c	10,000	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	50 U	5 U	5 U	5 U	25 U
Metals																								
Arsenic		µg/L	34.6	733	4.2 J	4.1 J	18.7	72.8	10 U	4.4 J	5.3 J	326	1.8 J	3.1 J	2.5 J	5.1 J	6.5 J	10 U	4.6 J	3.6 J	9.2 J	10 U	15.2	10 U
Iron		µg/L	100 U	4690	2470	6030	1880	3510	21.7 J	2180	446	1680	100 U	34.9 J	3400	24800	7900	122000	3150	1300	9640	134000	24000	171000
Manganese		µg/L	22.9	128	447	44.1	219	60.9	34.8	192	524	61.4	15 U	19.6	534	2490	478	4000	197	1660	309	1400	337	990
Wet Chemistry																								
Chloride (Cl)	-	mg/L	5.7 J	1000	110	180	5.7 J	31	37	170	18 J	1900	7.3	160	44 J	240 J	2.9 J	210	13	340	5.2	300	85	220 J
Nit																								

Table 3. Analytical Results, December 2019
Monitored Natural Attenuation Monitoring - December 2019
OMC Plant 2 Site (OU4) - Waukegan, IL

Parameter	MCL ^a	Unit	MW-605S 12/05/2019	MW-605D 12/05/2019	MW-606S 12/06/2019	MW-606D 12/06/2019	MW-607S 12/04/2019	MW-607D 12/04/2019	MW-610S 12/03/2019	MW-610D 12/03/2019	MW-612S 12/06/2019	MW-612D 12/06/2019	MW-613S 12/05/2019	MW-613D 12/05/2019	MW-614S 12/05/2019	MW-614D 12/05/2019	MW-615S 12/04/2019	MW-615D 12/04/2019	MW-619S 12/03/2019	MW-619D 12/03/2019	MW-620S 12/04/2019	MW-620D 12/04/2019	MW-621S 12/06/2019	MW-621D 12/06/2019	MW-623S 12/03/2019	MW-623D 12/03/2019	
Polychlorinated Biphenyls (PCBs)																											
Aroclor 1016	-	µg/L							0.98 U	0.97 U				9.7 U											0.99 U	0.96 U	
Aroclor 1221	-	µg/L							0.98 U	0.97 U				9.7 U											0.99 U	0.96 U	
Aroclor 1232	-	µg/L							0.98 U	0.97 U				9.7 U											0.99 U	0.96 U	
Aroclor 1242	-	µg/L							0.98 U	0.97 U				620 J											0.99 U	0.96 U	
Aroclor 1248	-	µg/L							0.98 U	0.97 U				9.7 U											0.99 U	0.96 U	
Aroclor 1254	-	µg/L							0.98 U	0.97 U				9.7 U											0.99 U	0.96 U	
Aroclor 1260	-	µg/L							0.98 U	0.97 U				9.7 U											0.99 U	0.96 U	
Aroclor 1262	-	µg/L							0.98 U	0.97 U				9.7 U											0.99 U	0.96 U	
Aroclor 1268	-	µg/L							0.98 U	0.97 U				9.7 U											0.99 U	0.96 U	
Volatile Organic Compounds																											
1,1,1-Trichloroethane	200	µg/L	5 U	50 U	5 U	5 U	5 U	500 U	5 U	25 U	5 U	5 U	5 U	100 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,1,2,2-Tetrachloroethane	-	µg/L	5 U	50 U	5 U	5 U	5 U	500 U	5 U	25 U	5 U	5 U	5 U	100 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,1,2-Trichloroethane	5	µg/L	5 U	50 U	5 U	5 U	5 U	500 U	5 U	25 U	5 U	5 U	5 U	100 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,1-Dichloroethane	-	µg/L	0.91 J	50 U	5 U	5 U	5 U	500 U	5 U	25 U	5 U	5 U	5 U	100 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,1-Dichloroethene	7	µg/L	3.5 J	13 J	5 U	5 U	5 U	570	5 U	5.8 J	5 U	5 U	5 U	49 J	5 U	7.8	5 U	1.8 J	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2,3-Trichlorobenzene	-	µg/L	5 U	50 U	5 U	5 U	5 U	500 U	5 U	25 U	5 U	5 U	5 U	100 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2,4-Trichlorobenzene	70	µg/L	5 U	50 U	5 U	5 U	5 U	500 U	5 U	25 U	5 U	5 U	5 U	100 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dibromo-3-chloropropane	0.2	µg/L	5 U	50 U	5 U	5 U	5 U	500 U	5 U	25 U	5 U	5 U	5 U	100 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dibromoethane	0.05	µg/L	5 U	50 U	5 U	5 U	5 U	500 U	5 U	25 U	5 U	5 U	5 U	100 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dichlorobenzene	600	µg/L	5 U	50 U	5 U	5 U	5 U	500 U	5 U	25 U	5 U	5 U	5 U	100 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dichloroethane	5	µg/L	5 U	50 U	5 U	5 U	5 U	500 U	5 U	25 U	5 U	5 U	5 U	100 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dichloropropane	5	µg/L	5 U	50 U	5 U	5 U	5 U	500 U	5 U	25 U	5 U	5 U	5 U	100 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,3-Dichlorobenzene	-	µg/L	5 U	50 U	5 U	5 U	5 U	500 U	5 U	25 U	5 U	5 U	5 U	100 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,4-Dichlorobenzene	75	µg/L	5 U	50 U	5 U	5 U	5 U	500 U	5 U	25 U	5 U	5 U	5 U	100 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2-Butanone	-	µg/L	10 U	100 U	10 U	120	10 U	1000 U	10 U	50 U	10 U	45	10 U	200 U	10 U	10 U	10 U	12 U	10 U	10 U	10 U	20 U	10 U	9 U	10 U	10 U	10 U
2-Hexanone	-	µg/L	10 U	100 U	10 U	10 U	10 U	1000 U	10 U	50 U	10 U	10 U	10 U	200 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-Pentanone	-	µg/L	10 U	100 U	10 U	10 U	10 U	1000 U	10 U	50 U	10 U	10 U	10 U	200 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Acetone	-	µg/L	10 U	100 U	10 U	40 U	10 U	1000 U	10 U	50 U	10 U	55 U	10 U	200 U	10 U	10 U	10 U	14 U	10 U	10 U	10 U	11 U	10 U	6.2 U	10 U	10 U	10 U
Benzene	5	µg/L	5 U	50 U	5 U	5 U	5 U	500 U	5 U	25 U	5 U	5 U	5 U	100 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Bromochloromethane	-	µg/L	5 U	50 U	5 U	5 U	5 U	500 U	5 U	25 U	5 U	5 U	5 U	100 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Bromodichloromethane ^b	80	µg/L	5 U	50 U	5 U	5 U	5 U	500 U	5 U	25 U	5 U	5 U	5 U	100 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Bromoform ^b	80	µg/L	5 U	50 U	5 U	5 U	5 U	500 U	5 U	25 U	5 U	5 U	5 U	100 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Bromomethane	-	µg/L	5 U	50 U	5 U	5 U	5 U	500 U	5 U	25 U	5 U	5 U	5 U	100 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Carbon Disulfide	-	µg/L	5 U	50 U	5 U	5 U	5 U	500 U	5 U	25 U	5 U	5 U	5 U	100 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Carbon tetrachloride	5	µg/L	5 U	50 U	5 U	5 U	5 U	500 U	5 U	25 U	5 U	5 U	5 U	100 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Chlorobenzene	100	µg/L	5 U	50 U	5 U	5 U	5 U	500 U	5 U	25 U	5 U	5 U	5 U	100 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Chlorodibromomethane ^b	80	µg/L	5 U	50 U	5 U	5 U	5 U	500 U	5 U	25 U	5 U	5 U	5 U	100 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Chloroethane	-	µg/L	5 U	50 U	5 U	5 U	5 U	500 U	5 U	25 U	5 U	5 U	5 U	100 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Chloroform ^b																											

Table 3. Analytical Results, December 2019
Monitored Natural Attenuation Monitoring - December 2019
OMC Plant 2 Site (OU4) - Waukegan, IL

Parameter	MCL ^b	Unit	MW-624S 12/03/2019	MW-624D 12/03/2019	MW-625S 12/05/2019	MW-625D 12/05/2019	MW-626S 12/04/2019	MW-626D 12/04/2019	ST-MW-1S 12/05/2019	ST-MW-1D 12/05/2019	ST-MW-2S 12/04/2019	ST-MW-2D 12/04/2019	ST-MW-3S 12/05/2019	ST-MW-3D 12/05/2019	ST-MW-4S 12/05/2019	ST-MW-4D 12/05/2019	ST-MW-5S 12/04/2019	ST-MW-5D 12/04/2019	W-5 12/04/2019
Polychlorinated Biphenyls (PCBs)																			
Aroclor 1016	-	µg/L	0.95 U	0.97 U					0.95 U	4.8 U	0.97 U	0.98 U	0.94 U	0.96 U	0.93 U	1 U	9.8 U	0.97 U	0.95 U
Aroclor 1221	-	µg/L	0.95 U	0.97 U					0.95 U	4.8 U	0.97 U	0.98 U	0.94 U	0.96 U	0.93 U	1 U	9.8 U	0.97 U	0.95 U
Aroclor 1232	-	µg/L	0.95 U	0.97 U					0.95 U	4.8 U	0.97 U	0.98 U	0.94 U	0.96 U	0.93 U	1 U	9.8 U	0.97 U	0.95 U
Aroclor 1242	-	µg/L	0.95 U	0.97 U					99 J+	190	0.97 U	0.98 U	0.21 J	0.22 J	0.55 J	0.5 J	230	0.22 J	0.95 U
Aroclor 1248	-	µg/L	0.95 U	0.97 U					0.95 U	4.8 U	0.97 U	0.98 U	0.94 U	0.96 U	0.93 U	1 U	9.8 U	0.97 U	0.95 U
Aroclor 1254	-	µg/L	0.95 U	0.97 U					0.95 U	4.8 U	0.97 U	0.98 U	0.94 U	0.96 U	0.93 U	1 U	9.8 U	0.97 U	0.95 U
Aroclor 1260	-	µg/L	0.95 U	0.97 U					0.95 U	4.8 U	0.97 U	0.98 U	0.94 U	0.96 U	0.93 U	1 U	9.8 U	0.97 U	0.95 U
Aroclor 1262	-	µg/L	0.95 U	0.97 U					0.95 U	4.8 U	0.97 U	0.98 U	0.94 U	0.96 U	0.93 U	1 U	9.8 U	0.97 U	0.95 U
Aroclor 1268	-	µg/L	0.95 U	0.97 U					0.95 U	4.8 U	0.97 U	0.98 U	0.94 U	0.96 U	0.93 U	1 U	9.8 U	0.97 U	0.95 U
Volatile Organic Compounds																			
1,1,1-Trichloroethane	200	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,1,2,2-Tetrachloroethane	-	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,1,2-Trichloroethane	5	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,1-Dichloroethane	-	µg/L	5 U	3.1 J	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,1-Dichloroethene	7	µg/L	5 U	5 U	5 U	5 U	9.2	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2,3-Trichlorobenzene	-	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2,4-Trichlorobenzene	70	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dibromo-3-chloropropane	0.2	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dibromoethane	0.05	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dichlorobenzene	600	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dichloroethane	5	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dichloropropane	5	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,3-Dichlorobenzene	-	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,4-Dichlorobenzene	75	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2-Butanone	-	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Hexanone	-	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-Pentanone	-	µg/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Acetone	-	µg/L	10 U	10 U	10 UJ	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UJ	10 UJ	10 UJ
Benzene	5	µg/L	5 U	13	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	3 J	18	5 U
Bromochloromethane	-	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Bromodichloromethane ^b	80	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Bromoform ^b	80	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Bromomethane	-	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Carbon Disulfide	-	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Carbon tetrachloride	5	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Chlorobenzene	100	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Chlorodibromomethane ^b	80	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Chloroethane	-	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Chloroform ^b	80	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Chloromethane	-	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
cis-1,2-Dichloroethene	70	µg/L	5 U	1.1 J	3 J	2 J	400	5 U	2 J	140	5 U	5 U	5 U	5 U	5 U	5 U	1.2 J	5 U	5 U
cis-1,3-Dichloropropene	-	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Cyclohexane	-	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Dichlorodifluoromethane	-	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Ethylbenzene	700	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	0.51 J	5 U	5 U
Freon 113	-	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Isopropylbenzene	-	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	1.9 J	5 U	5 U
Methyl Acetate	-	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Methyl tert-butyl ether (MTBE)	-	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Methylcyclohexane	-	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Methylene Chloride	5	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Styrene	100	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Tetrachloroethene	5	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Toluene	1,000	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
trans-1,2-Dichloroethene	100	µg/L	5 U	5 U	5 U	5 U	2.5 J	5 U	5 U	2.8 J	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
trans-1,3-Dichloropropene	-	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Trichloroethylene	5	µg/L	5 U	5 U	5 U	5 U	180	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Trichlorofluoromethane	-	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Vinyl Chloride	2	µg/L	5 U	7.2	15	1100	140	4.9 J	5 U	0.61 J+	5 U	1.1 J	5 U	5 U	5 U	5 U	5 U	1.3 J+	5 U
Xylene, o ^c	10,000	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	0.9 J	5 U	5 U
Xylenes, m & p ^c	10,000	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Metals																			
Arsenic		µg/L	4.1 J	1120	1.9 J	7.1 J	7.7 J	2.3 J	10 U	5.4 J	3.8 J	10 U	1.8 J	2 J	2.9 J	2.4 J	672	538	2.1 J
Iron		µg/L	100 U	2990	1040	1680	6630	3020	3580	6920	6590	13700	1160	3010	2290	100 U	6260	1280	8250
Manganese		µg/L	286	90	365	48	1110	46.7	80.3	70.4	1020	270	434	399	245	5 J	345	47.5	93.2
Wet Chemistry																			
Chloride (Cl)	-	mg/L	3.8 J	310	24	180	9.8	130	230	530	37	130 J-	22	330	270	77	28	220	770
Nitrate (as N)	-	mg/L	0.05 U	0.05 U	0.05 UJ	0.14 J	0.05 U	0.05 U	0.029 J	0.05 UJ	0.05 U	0.05 UJ	0.05 UJ	0.024 J	0.05 UJ	1.1 J	0.05 U	0.1	0.05 U
Nitrite (as N)	-	mg/L	0.05 U	0.05 U	0.05 UJ	0.05 UJ	0.0039 J	0.05 U	0.05 UJ	0.0068 J	0.05 U	0.018 J	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 U	0.0088 J	0.05 U
Sulfate	-	mg/L	110	420	170	400	470	520	140	160	100 J-	110	260	98	1 U	290	39	110	28
Sulfide	-	mg/L	2.3	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.6	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Ethane	-	µg/L	10 U	18	35	31	24	4.9 J	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	2.9 J	10 U
Ethene	-	µg/L	10 U	10 U	5.3 J	260	14	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Methane	-	µg/L	57	540	9400	690	12000	3500	61	300	15 U	910	50	58	190	53	10000	300	74 J

Table 3. Analytical Results, December 2019
Monitored Natural Attenuation Monitoring - December 2019
OMC Plant 2 Site (OU4) - Waukegan, IL

Notes:

J indicates the result is an estimated quantity.

U indicates he analytes was not detected above the reported quantitation limit (QL).

UJ indicates the analyte was not detected above the QL and the QL is approximate.

^a Maximum Contaminant Level (MCL), EPA National Primary Drinking Water Regulations, EPA 816-F-09-004, May 2009.

^b MCL is for Total Trihalomethanes, includes the individual trihalomethanes (bromodichloromethane, chlorodibromomethane, chloroform, and tribromomethane).

^c MCL is for Total Xylenes, includes m,p-Xylene and o-Xylene; the MCL for total Xylenes was considered an evaluation surrogate.

µg/L = micrograms per liter

- = no criteria

Greyed cells indicate detection over the MCL.

Figures

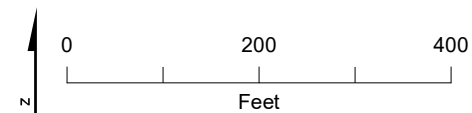
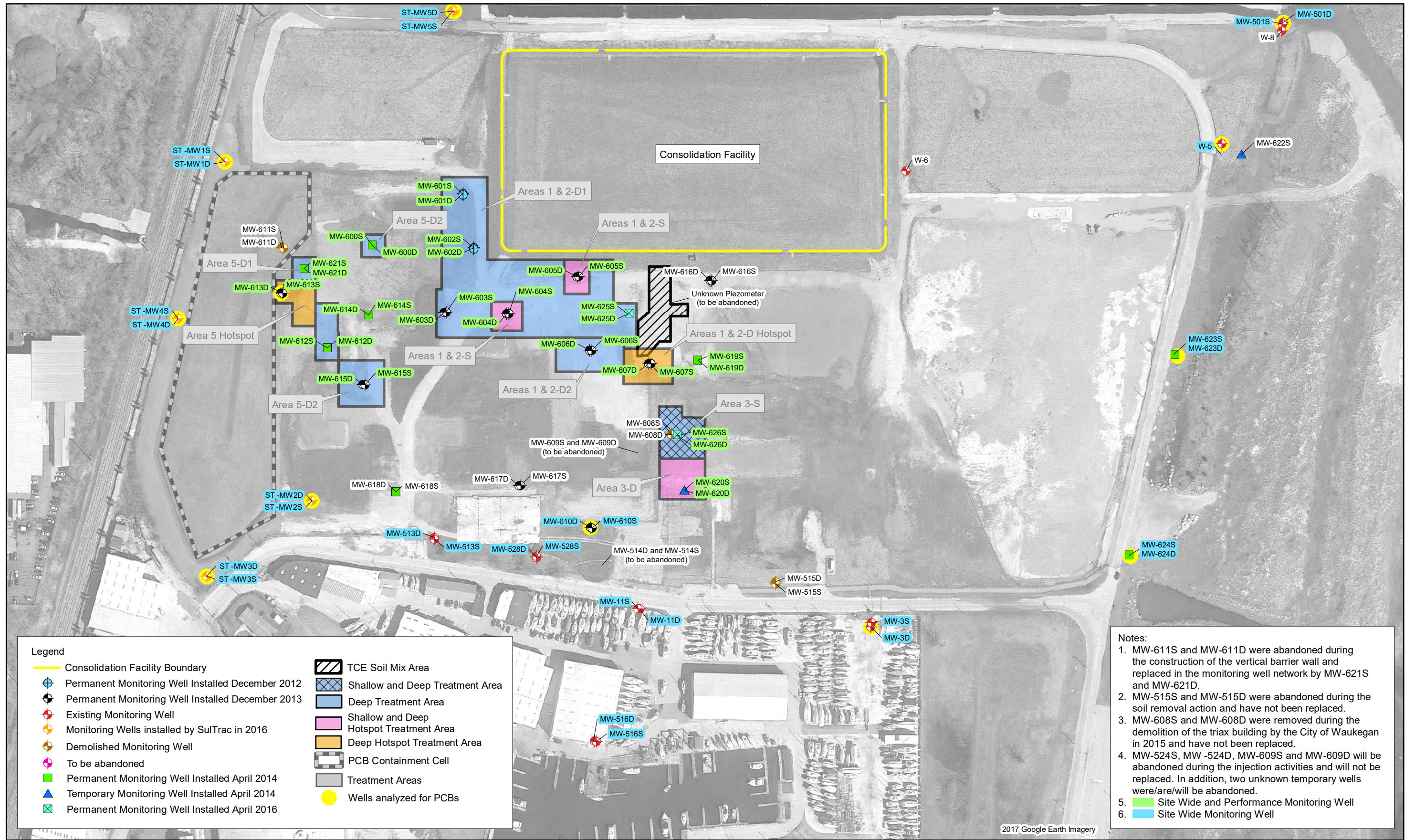


Figure 1
Monitoring Well and Groundwater Sampling Locations
OMC Plant 2
Waukegan, IL

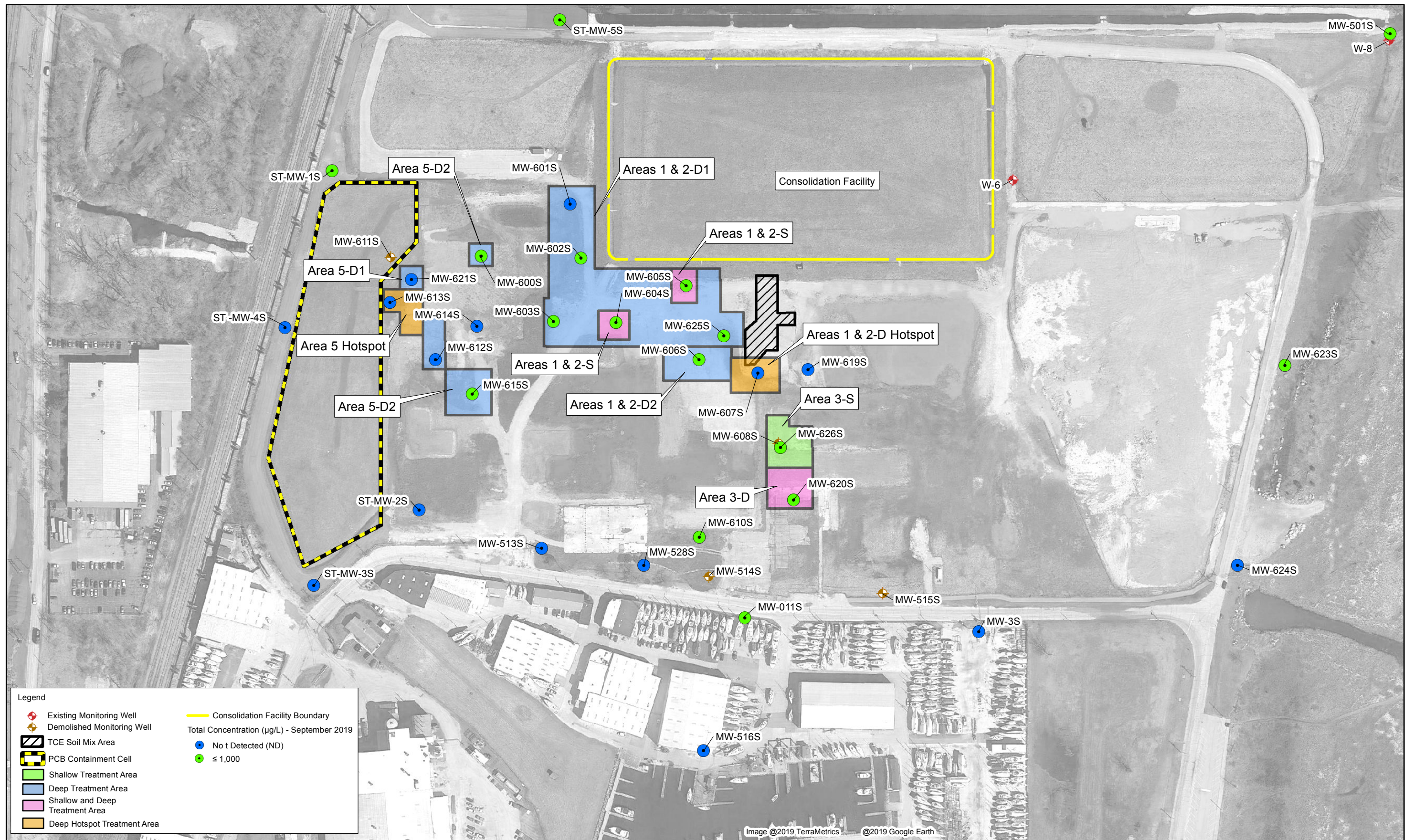


Figure 2A
December 2019 Sampling Results - Shallow Wells
OMC Plant 2
Waukegan, IL

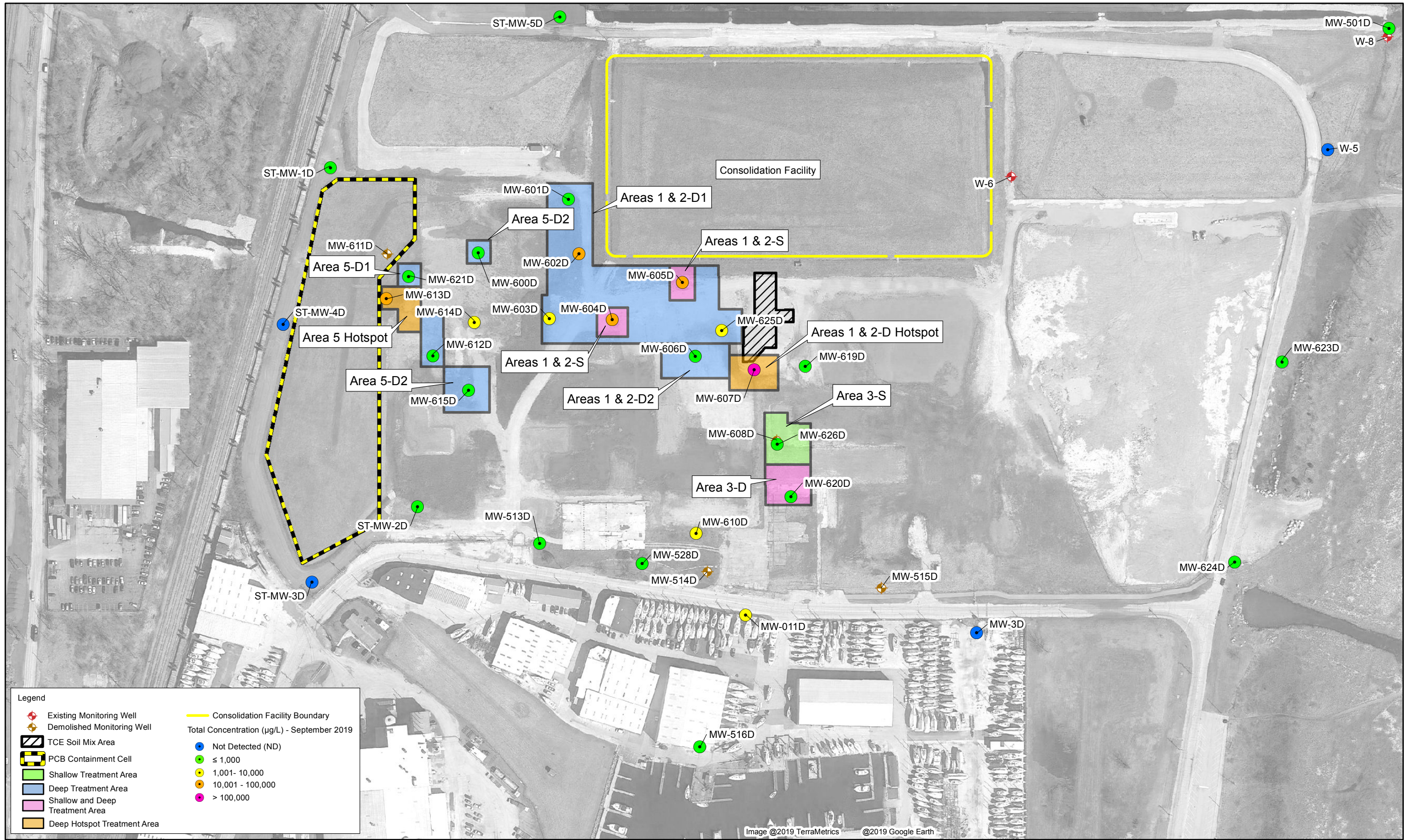


Figure 2B
 December 2019 Sampling Results - Deep Wells
 OMC Plant 2
 Waukegan, IL

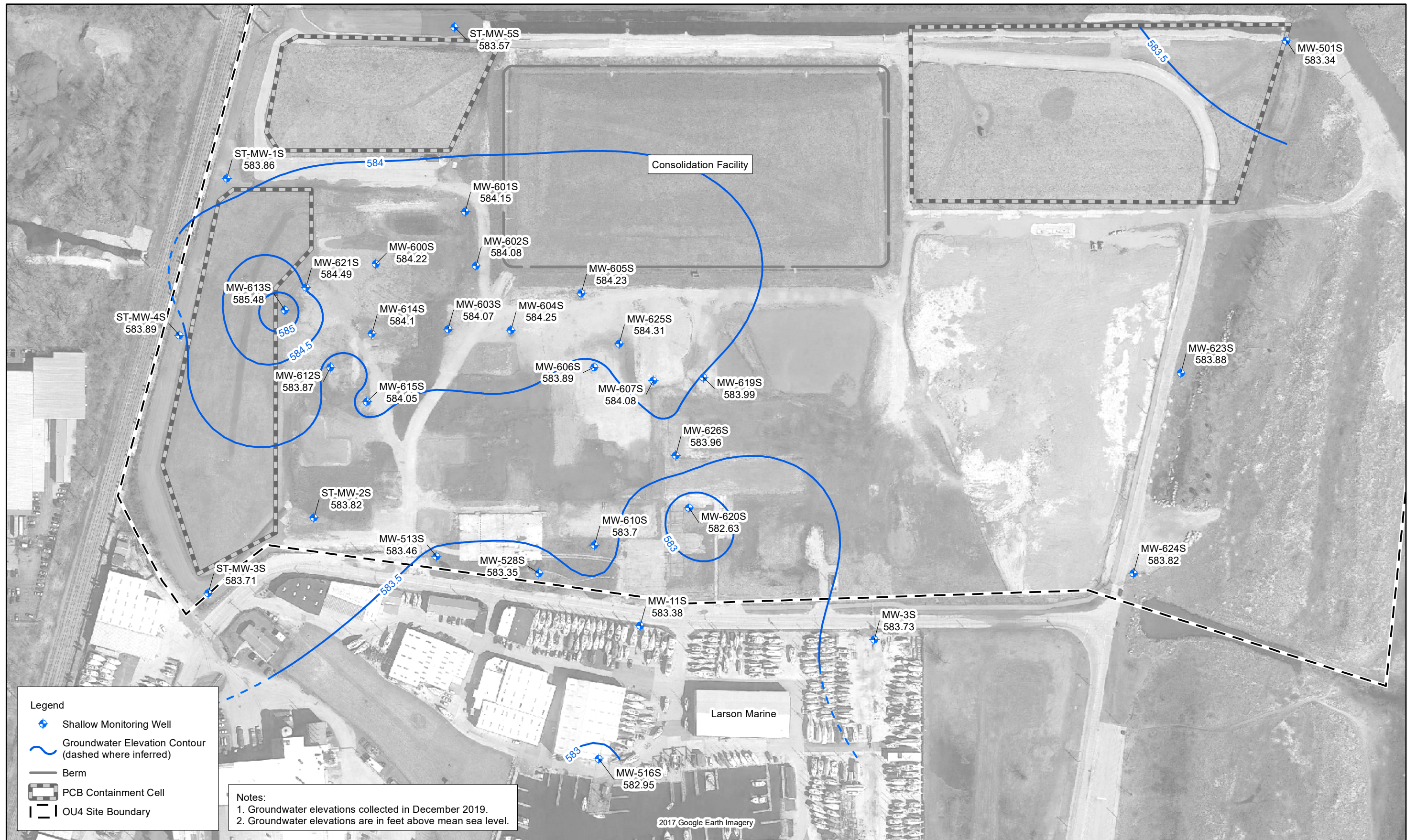
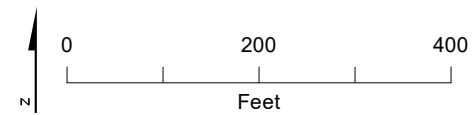


Figure 3A
December 2019 Shallow Potentiometric Surface Map
OMC Plant 2
Waukegan, IL



Figure 3B
December 2019 Deep Potentiometric Surface Map
OMC Plant 2
Waukegan, IL



Attachment 1

Groundwater Sampling Forms

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: **MW35** Field Crew: **L. SCHARCH** Purpose of Sampling: **OMC Quarterly Sampling**
 Site: **OMC** Field Conditions: **CLOUDY 31°F**

WELL CONDITION

Well Pad	Acceptable	Not Acceptable	Explain:
Protective Casing	Acceptable	Not Acceptable	Explain:
Well Casing	Acceptable	Not Acceptable	Explain:
Locking Cap	Acceptable	Not Acceptable	Explain: NO LOCK
Well Label (outside)	Acceptable	Not Acceptable	Explain:
Well Label (inside)	Acceptable	Not Acceptable	Explain:
J-Plug	Acceptable	Not Acceptable	Explain: no J-plug

PURGE METHOD

Date: **12/3/19** Time: **8:17** Method: **low-flow**
 Total Well Depth (ft) = **14.80**
 Depth to Water (ft): = **3.89**
 Water Column (ft): = **10.91** **1.8** **1 volume**
 Comments:

OBSERVATIONS

Odor: **None**, Low, High, H₂S, Fuel Like, Other:
 Comments:

FIELD PARAMETERS

Time	Volume (gal)	Rate (mL/min)	pH (s.u.)	DO (mg/L)	ORP (mV)	Specific Conductance (mS/cm)	Temp (°C)	Turbidity (NTU)	Depth to water (feet)
8:17	-	-	+/- 0.1 s.u.	+/- 10%	+/- 10 mV	+/- 3%	+/- 3%	<10 NTU	-
8:20	1	240	6.88	1.90	185.3	0.274	8.70	7.7	3.98
8:25		240	6.83	1.60	176.3	0.274	8.13	7.6	3.98
8:30		280	6.82	1.49	170.4	0.275	8.11	5.1	3.98
8:35		280	6.84	1.50	165.7	0.278	8.16	4.0	3.98
8:40		220	6.84	1.30	161.0	0.279	8.03	2.5	3.98
8:45	✓	220	6.84	1.26	159.3	0.280	8.04	3.1	3.98
8:50	~3	220	6.84	1.33	156.9	0.281	7.97	1.9	3.98
8:55		SAMPLED							

SAMPLING

Date: **12/3/19** Time: **8:55**
 Sample ID: **OMC - MW - 35** Method of Sample Collection: **grab**
 Analytical Parameters: **VOCs, MNA + Metals**
 Q.C. Sample Type: **N/A** MS/MSD Duplicate Duplicate Sample ID: **N/A**
 Q.C. Parameters: **N/A**
 Trash picked up? **Y** Well locked? **Y**
 SIGNED/SAMPLER: **Laci Scharch**

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: MW-3D Field Crew: K Ma Purpose of Sampling: OMC Quarterly Sampling
 Site: OMC Field Conditions: 35 Windy

WELL CONDITION

Well Pad	Acceptable	<u>Not Acceptable</u>	Explain:
Protective Casing	<u>Acceptable</u>	Not Acceptable	Explain:
Well Casing	<u>Acceptable</u>	Not Acceptable	Explain:
Locking Cap	<u>Acceptable</u>	Not Acceptable	Explain:
Well Label (outside)	<u>Acceptable</u>	Not Acceptable	Explain:
Well Label (inside)	<u>Acceptable</u>	Not Acceptable	Explain:
J-Plug	Acceptable	<u>Not Acceptable</u>	Explain: <u>no plug</u>

PURGE METHOD

Date: 12/3/19 Time: 0820 Method: low-flow
 Total Well Depth (ft) = 30.65
 Depth to Water (ft): = 3.61
 Water Column (ft): = 26.05 4.4
 Comments: 27.07 (cm) 1 volume

OBSERVATIONS

Odor: None, Low, High, H₂S, Fuel Like, Other:

Comments: clear, slightly yellow

FIELD PARAMETERS

Time	Volume (gal)	Rate (mL/min)	pH (s.u.) +/- 0.1 s.u.	DO (mg/L) +/- 10%	ORP (mV) +/- 10 mV	Specific Conductance (mS/cm) +/- 3%	Temp (°C) +/- 3%	Turbidity (NTU) <10 NTU	Depth to water (feet)
0825		225	7.59	3.08	60.7	5.406	10.66	44	3.65
0830		225	7.52	2.85	-144.1	5.444	10.23	1.0	3.65
0835		225	7.48	2.64	-161.6	5.460	10.17	0	3.65
0840		225	7.41	2.60	-159.4	5.535	10.26	0	3.65
0845		225	7.33	2.54	-154.6	5.641	10.32	0	3.65
0850		225	7.29	2.46	-152.2	5.701	10.33	0	3.65
0900		225	7.28	2.45	-152.2	5.720 ^(EN)	10.20	0	3.65
0905	✓	225	7.25	2.41	-149.1	5.737	10.30	0	3.65
0910	N4	225	7.25	2.43	-149.2	5.730	10.32	0	3.65
— Sampled @ 0915 —									

SAMPLING

Date: 12/3/19 Time: 0915
 Sample ID: OMC-MW-3D Method of Sample Collection: grab

Analytical Parameters: VOC, dissolved metals, MNA, PCB

Q.C. Sample Type: N/A MS/MSD Duplicate Duplicate Sample ID: N/A

Q.C. Parameters: N/A

Trash picked up? Y Well locked? Y

SIGNED/SAMPLER: K Ma

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: **MW-115** Field Crew: **L. SCHARCH** Purpose of Sampling: **OMC Quarterly Sampling**
 Site: **OMC** Field Conditions: **CLOUDY 34°F**

WELL CONDITION

Well Pad	Acceptable	Not Acceptable	Explain:
Protective Casing	Acceptable	Not Acceptable	Explain:
Well Casing	Acceptable	Not Acceptable	Explain:
Locking Cap	Acceptable	Not Acceptable	Explain: NO LOCK
Well Label (outside)	Acceptable	Not Acceptable	Explain: N/A
Well Label (inside)	Acceptable	Not Acceptable	Explain:
J-Plug	Acceptable	Not Acceptable	Explain: Needs new J-plug

PURGE METHOD

Date: Time: Method: **low-flow**

Total Well Depth (ft) = **13.85**

Depth to Water (ft): = **4.02**

Water Column (ft): = **9.83**

1.6

1 volume

Comments:

OBSERVATIONS

Odor: **None** Low High H₂S Fuel Like Other:

Comments: **CLOUDY BROWN WATER FOR FIRST TWO READINGS, CLEARED @ 10:10**

FIELD PARAMETERS

Time	Volume (gal)	Rate (mL/min)	pH (s.u.)	DO (mg/L)	ORP (mV)	Specific Conductance (mS/cm)	Temp (°C)	Turbidity (NTU)	Depth to water (feet)
9:56			+/- 0.1 s.u.	+/- 10%	+/- 10 mV	+/- 3%	+/- 3%	<10 NTU	
10:00		400	7.01	0.37	163.3	1.030	8.39	83.5	4.02
10:05		320	7.03	0.33	156.1	1.049	8.09	62.6	4.02
10:10		320	7.05	0.34	150.6	1.057	7.98	60.2	4.02
10:15		320	7.06	0.29	143.6	1.061	7.96	50.0	4.02
10:20		240	7.07	0.25	135.2	1.066	7.99	37.7	4.02
10:25		240	7.09	0.24	125.2	1.072	7.95	31.9	4.02
10:30		240	7.10	0.22	113.9	1.076	7.93	20.5	4.02
10:35		240	7.11	0.21	97.9	1.078	8.04	13.6	4.02
10:40		240	7.11	0.23	91.6	1.074	7.95	10.8	4.02
10:45		240	7.12	0.26	79.5	1.066	8.07	6.2	4.02
10:50		240	7.12	0.28	70.1	1.057	7.97	6.2	4.02
10:55		240	7.12	0.30	60.4	1.047	8.00	3.6	4.02

SAMPLING

Date: **12/3/2019**

Time: **11:35**

Sample ID: **OMC-MW-115**

Method of Sample Collection: **grab**

Analytical Parameters: **VOCs, Metals, MNA**

Q.C. Sample Type: **N/A** MS/MSD Duplicate Duplicate Sample ID: **N/A**

Q.C. Parameters: **N/A**

Trash picked up?

Well locked?

SIGNED/SAMPLER:

L. Scharch

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: **MW-115** Field Crew: **L. SCHARCH** Purpose of Sampling: **OMC Quarterly Sampling**
 Site: **OMC** Field Conditions: **PARTLY CLOUDY 34°F**

WELL CONDITION

Well Pad	Acceptable	Not Acceptable	Explain:
Protective Casing	Acceptable	Not Acceptable	Explain:
Well Casing	Acceptable	Not Acceptable	Explain:
Locking Cap	Acceptable	Not Acceptable	Explain:
Well Label (outside)	Acceptable	Not Acceptable	Explain:
Well Label (inside)	Acceptable	Not Acceptable	Explain:
J-Plug	Acceptable	Not Acceptable	Explain:

SEE Pg 1

PURGE METHOD

Date: Time: Method: low-flow

Total Well Depth (ft) = 13.85

Depth to Water (ft): =

Water Column (ft): =

Comments:

1 volume

OBSERVATIONS

Odor: None, Low, High, H₂S, Fuel Like, Other:

Comments:

FIELD PARAMETERS

Time	Volume (gal)	Rate (mL/min)	pH (s.u.)	DO (mg/L)	ORP (mV)	Specific Conductance (mS/cm)	Temp (°C)	Turbidity (NTU)	Depth to water (feet)
	--	--	+/- 0.1 s.u.	+/- 10%	+/- 10 mV	+/- 3%	+/- 3%	<10 NTU	--
11:00		240	7.12	0.31	52.8	1.045	8.06	2.5	4.02
11:05		240	7.12	0.33	45.0	1.038	8.18	2.0	4.02
11:10		240	7.12	0.34	38.8	1.037	8.24	1.8	4.02
11:15		240	7.13	0.34	32.8	1.032	8.03	1.3	4.02
11:20		240	7.13	0.34	27.5	1.030	8.11	1.0	4.02
11:25	↓	240	7.12	0.36	22.5	1.029	8.19	1.1	4.02
11:30	N8	240	7.13	0.37	17.8	1.023	8.03	0.8	4.02
11:35		SAMPLED							

SAMPLING

Date: 12/3/2019

Time: 10:35

Sample ID: OMC - MW - 115

Method of Sample Collection: grab

Analytical Parameters: VOCs, MNA, Metals

Q.C. Sample Type: N/A MS/MSD Duplicate Duplicate Sample ID: N/A

Q.C. Parameters: N/A

Trash picked up? ☒Well locked? ☒

SIGNED/SAMPLER:

Rad Scharch

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: MW-11D Field Crew: K. Ma Purpose of Sampling: OMC Quarterly Sampling
 Site: OMC Field Conditions: 38F Windy

WELL CONDITION

Well Pad	<u>Acceptable</u>	Not Acceptable	Explain:
Protective Casing	<u>Acceptable</u>	Not Acceptable	Explain:
Well Casing	<u>Acceptable</u>	Not Acceptable	Explain:
Locking Cap	<u>Acceptable</u>	<u>Not Acceptable</u>	Explain:
Well Label (outside)	<u>Acceptable</u>	Not Acceptable	Explain:
Well Label (inside)	<u>Acceptable</u>	Not Acceptable	Explain:
J-Plug	<u>Acceptable</u>	<u>Not Acceptable</u>	Explain:

PURGE METHOD

Date: 12/3/19 Time: 1000 Method: low-flow
 Total Well Depth (ft) = 30.65
 Depth to Water (ft): = 4.05
 Water Column (ft): = 26.6 4.3
 Comments: 1 volume

OBSERVATIONS

Odor: None, Low, High, H₂S, Fuel Like, Other:
 Comments: slightly cloudy

FIELD PARAMETERS

Time	Volume (gal)	Rate (mL/min)	pH (s.u.) +/- 0.1 s.u.	DO (mg/L) +/- 10%	ORP (mV) +/- 10 mV	Specific Conductance (mS/cm) +/- 3%	Temp (°C) +/- 3%	Turbidity (NTU) <10 NTU	Depth to water (feet)
1005		225	7.28	2.87	-104.7	1.561	10.28	0	4.10
1010		250	7.22	2.62	-123.0	1.543	9.25	9.3	4.10
1015		250	7.19	2.55	-121.4	1.541	9.43	11.8	4.10
1020		275	7.19	2.33	-123.1	1.539	9.87	9.0	4.10
1025		250	7.16	2.13	-118.9	1.539	9.83	13.0	4.10
1030		250	7.15	1.91	-130.1	1.544	9.14	5.9	4.10
1040		250	7.15	1.90	-129.9	1.544	9.25	6.6	4.10
1045	<u>3.5</u>	250	7.15	1.89	-121.1	1.542	9.32	4.5	4.10
<u>Sampled @ 1050 / 1055</u>									

SAMPLING

Date: 12/3/19 Time: 1050 + 1055
 Sample ID: OMC-MW-11D Method of Sample Collection: grab
 Analytical Parameters: VOC, MNA, dissolved metals
 Q.C. Sample Type: MS/MSD Duplicate Duplicate Sample ID: OMC-MW-11D-R
 Q.C. Parameters: VOC, MNA, dissolved metals
 Trash picked up? Y Well locked? Y
 SIGNED/SAMPLER: [Signature]

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: MW-5015 Field Crew: SM/KW Purpose of Sampling: OMC Quarterly Sampling
 Site: OMC Field Conditions: 30°F. D-night Windy

WELL CONDITION

Well Pad	<u>Acceptable</u>	Not Acceptable	Explain:
Protective Casing	<u>Acceptable</u>	Not Acceptable	Explain:
Well Casing	<u>Acceptable</u>	Not Acceptable	Explain:
Locking Cap	<u>Acceptable</u>	Not Acceptable	Explain:
Well Label (outside)	<u>Acceptable</u>	Not Acceptable	Explain: <u>None (very hard to read)</u>
Well Label (inside)	<u>Acceptable</u>	Not Acceptable	Explain: <u>None</u>
J-Plug	<u>Acceptable</u>	Not Acceptable	Explain: <u>None</u>

PURGE METHOD

Date: 12/3/19 Time: 0811 Method: low-flow
 Total Well Depth (ft): = 1016
 Depth to Water (ft): = 2.84
 Water Column (ft): = 7.32 1.2
 Comments: 1 volume

OBSERVATIONS

Odor: None, Low, High, H₂S, Fuel Like, Other:

Comments: Very orange & turbid at start w/ large black particulates

FIELD PARAMETERS

Time	Volume (gal)	Rate (mL/min)	pH (s.u.) ± 0.1 s.u.	DO (mg/L) ± 10%	ORP (mV) ± 10 mV	Specific Conductance (mS/cm) ± 3%	Temp (°C) ± 3%	Turbidity (NTU) ≤ 10 NTU	Depth to water (feet)
0820	0.4	300	7.14	2.86	128.4	0.587	6.68	1545	2.93
0825	0.8	300	7.19	1.03	-3.0	0.555	6.97	38.2	2.94
0830	1.2	300	7.21	0.67	-39.3	0.535	7.10	17.0	2.94
0835	1.6	300	7.24	0.67	-60.4	0.517	7.21	7.5	2.95
0840	2.0	300	7.25	0.35	-67.3	0.513	7.12	4.7	2.95
0845	2.4	300	7.26	0.46	-73.0	0.510	7.19	4.7	2.95
0850	2.6	300	7.27	0.25	-76.9	0.510	7.16	3.3	2.95
0855	3.0	300	7.28	0.31	-80.7	0.510	7.20	2.3	2.95
0900	3.4	300	7.29	0.22	-83.1	0.509	7.24	1.6	2.95
0905	SAMPLE								

SAMPLING

Date: 12/3/19 Time: 0905
 Sample ID: OMC-MW-5015 Method of Sample Collection: grab

Analytical Parameters: VOCS, MNA, Dissolved Met & PCBs

Q.C. Sample Type: NA MS/MSD Duplicate Duplicate Sample ID: NA

Q.C. Parameters: NA

Trash picked up? Y Well locked? Y

SIGNED/SAMPLER:

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: MW 501D Field Crew: K. Wilson Purpose of Sampling: OMC Quarterly Sampling
 Site: OMC Field Conditions: 30°F, cloudy, windy

WELL CONDITION

Well Pad	Acceptable	<u>Not Acceptable</u>	Explain: <u>None</u>
Protective Casing	<u>Acceptable</u>	Not Acceptable	Explain:
Well Casing	<u>Acceptable</u>	Not Acceptable	Explain:
Locking Cap	<u>Acceptable</u>	Not Acceptable	Explain:
Well Label (outside)	Acceptable	<u>Not Acceptable</u>	Explain: <u>Faded</u>
Well Label (inside)	Acceptable	<u>Not Acceptable</u>	Explain: <u>None</u>
J-Plug	<u>Acceptable</u>	Not Acceptable	Explain:

PURGE METHOD

Date: 12/3/19 Time: 0805 Method: low-flow
 Total Well Depth (ft) = 31.23
 Depth to Water (ft): = 2.79
 Water Column (ft): = 28.44 4.6
 Comments: 1 volume

OBSERVATIONS

Odor: None, Low, High, H₂S, Fuel Like, Other:
 Comments: clear

FIELD PARAMETERS

Time	Volume (gal)	Rate (mL/min)	pH (s.u.) ±0.1 s.u.	DO (mg/L) ±10%	ORP (mV) ±10 mV	Specific Conductance (mS/cm) ±3%	Temp (°C) ±3%	Turbidity (NTU) <10 NTU	Depth to water (feet)
0815	0.4 gal	300	6.84	1.61	-8.0	0.573	9.27	0.0	2.94
0820	0.8 gal	300	6.95	0.82	-91.7	0.571	9.67	0.0	2.94
0825	1.2 gal	300	7.20	0.50	-130.0	0.569	9.95	0.0	2.95
0830	1.6 gal	300	7.35	0.41	-142.0	0.572	10.04	0.0	2.95
0835	2.0 gal	300	7.42	0.32	-146.8	0.573	10.04	1.1	2.99
0840	2.4 gal	300	7.48	0.29	-148.3	0.573	10.09	0.0	3.00
0845	2.8 gal	300	7.52	0.27	-150.1	0.575	10.17	0.0	3.00

SAMPLING

Date: 12/3/19 Time: 0846
 Sample ID: OMC-MW-501D Method of Sample Collection: grab
 Analytical Parameters: Alkalinity, Anions, PCBs, VOCs, MEE, Sulfide, TOC, dissolved metals
 Q.C. Sample Type: NA MS/MSD Duplicate Duplicate Sample ID: ch
 Q.C. Parameters: NA
 Trash picked up? Y Well locked? Y
 SIGNED/SAMPLER: [Signature]

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: **MW-513S** Field Crew: **L. SCHARPCH** Purpose of Sampling: **OMC Quarterly Sampling**
 Site: **OMC** Field Conditions: **SUNNY 40°F**

WELL CONDITION

Well Pad	Acceptable	Not Acceptable	Explain:
Protective Casing	Acceptable	Not Acceptable	Explain:
Well Casing	Acceptable	Not Acceptable	Explain:
Locking Cap	Acceptable	Not Acceptable	Explain:
Well Label (outside)	Acceptable	Not Acceptable	Explain: N/A
Well Label (inside)	Acceptable	Not Acceptable	Explain:
J-Plug	Acceptable	Not Acceptable	Explain:

PURGE METHOD

Date: **12/3/19** Time: **15:10** Method: **low-flow**
 Total Well Depth (ft) = **6.90**
 Depth to Water (ft): = **1.93**
 Water Column (ft): = **4.97** **0.81**
 Comments: 1 volume

OBSERVATIONS

Odor: **None**, Low, High, H₂S, Fuel Like, Other:
 Comments:

FIELD PARAMETERS

Time	Volume (gal)	Rate (mL/min)	pH (s.u.) +/- 0.1 s.u.	DO (mg/L) +/- 10%	ORP (mV) +/- 10 mV	Specific Conductance (mS/cm) +/- 3%	Temp (°C) +/- 3%	Turbidity (NTU) <10 NTU	Depth to water (feet)
15:15		240	7.38	7.24	56.5	0.776	9.30	3.7	1.93
15:20		240	7.28	6.79	57.0	0.779	9.25	0.0	1.93
15:25		240	7.18	6.13	58.7	0.781	9.20	0.1	1.93
15:30		240	7.15	5.49	59.5	0.787	9.20	0.0	1.93
15:35		240	7.13	5.03	60.0	0.790	9.24	0.0	1.93
15:40		240	7.12	4.63	60.4	0.793	9.25	0.0	1.93
15:45		240	7.11	4.25	60.8	0.794	9.31	0.0	1.93
15:50		240	7.10	3.93	61.1	0.796	9.34	0.0	1.93
15:55	✓	240	7.08	3.74	61.1	0.796	9.34	0.0	1.93
16:00	~3.5	240	7.09	3.73	61.0	0.796	9.34	0.0	1.93
16:05		SAMPLED							

SAMPLING

Date: **12/3/2019** Time: **16:05**
 Sample ID: **OMC-MW-513S** Method of Sample Collection: **grab**
 Analytical Parameters: **VOCs, Metals + Mn/A**
 Q.C. Sample Type: **N/A** MS/MSD Duplicate Duplicate Sample ID: **N/A**
 Q.C. Parameters: **N/A**

Trash picked up? **Y** Well locked? **Y**
 SIGNED/SAMPLER: **Rae Schran**

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: **MW-513D** Field Crew: **KMA** Purpose of Sampling: **OMC Quarterly Sampling**
 Site: **OMC** Field Conditions: **40°F Sunny**

WELL CONDITION

Well Pad	<u>Acceptable</u>	Not Acceptable	Explain:
Protective Casing	<u>Acceptable</u>	Not Acceptable	Explain:
Well Casing	<u>Acceptable</u>	Not Acceptable	Explain:
Locking Cap	<u>Acceptable</u>	Not Acceptable	Explain:
Well Label (outside)	<u>Acceptable</u>	Not Acceptable	Explain:
Well Label (inside)	<u>Acceptable</u>	Not Acceptable	Explain:
J-Plug	<u>Acceptable</u>	Not Acceptable	Explain:

PURGE METHOD

Date: **12/3/19** Time: **1500** Method: **low-flow**
 Total Well Depth (ft) = **23.25**
 Depth to Water (ft): = **1.95**
 Water Column (ft): = **21.3** **3.5**
 Comments: 1 volume

OBSERVATIONS

Odor: None , Low , High , H₂S , Fuel Like , Other:
 Comments:

FIELD PARAMETERS

Time	Volume (gal)	Rate (mL/min)	pH (s.u.) +/- 0.1 s.u.	DO (mg/L) +/- 10%	ORP (mV) +/- 10 mV	Specific Conductance (mS/cm) +/- 3%	Temp (°C) +/- 3%	Turbidity (NTU) <10 NTU	Depth to water (feet)
1505		250	7.41	1.79	77.5	1.104	11.29	18.6	2.08
1510		250	7.27	1.02	67.7	1.127	11.05	13.9	2.08
1515		250	7.26	0.91	61.6	1.135	11.18	9.0	2.08
1520		250	7.26	0.77	57.6	1.138	11.27	7.4	2.08
1530		250	7.25	0.68	52.2	1.144	11.20	7.8	2.08
1535		250	7.24	0.58	45.6	1.156	11.09	6.5	2.08
1540	✓	250	7.24	0.54	42.0	1.164	11.15	6.2	2.08
1545	~3.5	250	7.24	0.52	38.4	1.168	11.11	6.2	2.08
— Sampled @				1550					

SAMPLING

Date: **OMC-MW-513D** Time: **1550**
 Sample ID: **12/3/19** Method of Sample Collection: **grab**
 Analytical Parameters: **VOC, PCE, MNA, Dissolved metals**
 Q.C. Sample Type: **N/A** MS/MSD Duplicate Duplicate Sample ID: **N/A**
 Q.C. Parameters: **N/A**
 Trash picked up? **y** Well locked? **y**
 SIGNED/SAMPLER: **[Signature]**

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: **MW-516S** Field Crew: **L. SCHARCH** Purpose of Sampling: **OMC Quarterly Sampling**
 Site: **OMC** Field Conditions: **CLOUDY 33°F**

WELL CONDITION

Well Pad	<u>Acceptable</u>	Not Acceptable	Explain:
Protective Casing	<u>Acceptable</u>	Not Acceptable	Explain:
Well Casing	<u>Acceptable</u>	Not Acceptable	Explain:
Locking Cap	<u>Acceptable</u>	Not Acceptable	Explain:
Well Label (outside)	Acceptable	Not Acceptable	Explain: N/A
Well Label (inside)	<u>Acceptable</u>	Not Acceptable	Explain:
J-Plug	<u>Acceptable</u>	Not Acceptable	Explain:

PURGE METHOD

Date: **12/23/12** Time: **13:53** Method: **low-flow**
 Total Well Depth (ft) = **8.19**
 Depth to Water (ft) = **0.96**
 Water Column (ft) = **7.23** **181.2 (km)**
 Comments: **1 volume**

OBSERVATIONS

Odor: None, Low, High, H₂S, Fuel Like, Other:
 Comments: **CLEAR**

FIELD PARAMETERS

Time	Volume (gal)	Rate (mL/min)	pH (s.u.) +/- 0.1 s.u.	DO (mg/L) +/- 10%	ORP (mV) +/- 10 mV	Specific Conductance (mS/cm) +/- 3%	Temp (°C) +/- 3%	Turbidity (NTU) <10 NTU	Depth to water (feet)
13:55		360	7.08	0.64	183.0	0.750	9.12	1.5	0.96
14:00		240	7.08	0.52	179.7	0.749	8.98	0.9	0.96
14:05		280	7.10	0.42	176.0	0.749	8.99	0.2	0.96
14:10		200	7.11	0.35	173.2	0.748	8.98	0.0	0.96
14:15	✓	260	7.11	0.28	169.7	0.747	8.92	0.0	0.96
14:20		260	7.11	0.25	163.2	0.745	8.98	0.0	0.96
14:25	NH	SAMPLED							

SAMPLING

Date: **12/23/12** Time: **14:25**
 Sample ID: **OMC-MW-516S** Method of Sample Collection: **grab**
 Analytical Parameters: **VOCs & MNA, Dissolved Metals**
 Q.C. Sample Type: **N/A** MS/MSD **N/A** Duplicate **N/A** Duplicate Sample ID: **N/A**
 Q.C. Parameters: **N/A**
 Trash picked up? **Y** Well locked? **Y**
 SIGNED/SAMPLER: **L. Scharch**

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: MW-516D Field Crew: KMA Purpose of Sampling: OMC Quarterly Sampling
 Site: OMC Field Conditions: 35 Windy

WELL CONDITION

Well Pad	<u>Acceptable</u>	Not Acceptable	Explain:
Protective Casing	<u>Acceptable</u>	Not Acceptable	Explain:
Well Casing	<u>Acceptable</u>	Not Acceptable	Explain:
Locking Cap	<u>Acceptable</u>	Not Acceptable	Explain: <u>Flush man t</u>
Well Label (outside)	<u>Acceptable</u>	<u>Not Acceptable</u>	Explain:
Well Label (inside)	<u>Acceptable</u>	Not Acceptable	Explain:
J-Plug	<u>Acceptable</u>	Not Acceptable	Explain:

PURGE METHOD

Date: 12/2/19 Time: 131400 (KW) Method: low-flow
 Total Well Depth (ft): = 25.35
 Depth to Water (ft): = 0.97
 Water Column (ft): = 24.38 4.0

Comments: 1 volume

OBSERVATIONS

Odor: None, Low, High, H₂S, Fuel Like, Other:

Comments: slightly yellow

FIELD PARAMETERS

Time	Volume (gal)	Rate (mL/min)	pH (s.u.) +/- 0.1 s.u.	DO (mg/L) +/- 10%	ORP (mV) +/- 10 mV	Specific Conductance (mS/cm) +/- 3%	Temp (°C) +/- 3%	Turbidity (NTU) <10 NTU	Depth to water (feet)
1405		225	7.17	3.62	189.7	8.022	11.00	0.0	0.99
1410		225	7.33	1.64	51.5	8.100	11.35	0.0	0.99
1415		225	7.33	1.44	-87.5	8.082	11.53	0.0	.99
1420		225	7.32	0.98	-131.7	8.025	11.81	0.0	1.01
1425		225	7.31	0.85	-133.2	8.015	11.83	0.0	1.02
1430	<u>✓</u>	225	7.31	0.77	-138.0	7.814	11.81	0.0	1.00
1435	<u>N/A</u>	225	7.31	0.78	-138.9	8.015	11.76	0.0	1.00
<u>Sampled @ 1440</u>									

SAMPLING

Date: 12/2/19 Time: 1440
 Sample ID: OMC-MW-516D Method of Sample Collection: grab

Analytical Parameters: VOC, PCB, MNA, Dissolved Metals

Q.C. Sample Type: MS/MSD Duplicate Duplicate Sample ID: N/A

Q.C. Parameters: VOC, MNA, D metals

Trash picked up? N/A (KW) Y Well locked? N/A (KW) Y

SIGNED/SAMPLER:

KMA

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: MW - 5285 Field Crew: L. SCHMIDT Purpose of Sampling: OMC Quarterly Sampling
 Site: OMC Field Conditions: SUNNY 32°F

WELL CONDITION

Well Pad	Acceptable	Not Acceptable	Explain:
Protective Casing	Acceptable	Not Acceptable	Explain:
Well Casing	Acceptable	Not Acceptable	Explain:
Locking Cap	Acceptable	Not Acceptable	Explain:
Well Label (outside)	Acceptable	Not Acceptable	Explain:
Well Label (inside)	Acceptable	Not Acceptable	Explain:
J-Plug	Acceptable	Not Acceptable	Explain:

PURGE METHOD

Date: 12/4/2019 Time: 7:40 Method: low-flow
 Total Well Depth (ft) = 5.36
 Depth to Water (ft): = 3.38
 Water Column (ft): = 1.98 0.32
 Comments: 1 volume

OBSERVATIONS

Odor: None, Low, High, H₂S, Fuel Like, Other:

Comments: Clear

FIELD PARAMETERS

Time	Volume (gal)	Rate (mL/min)	pH (s.u.) +/- 0.1 s.u.	DO (mg/L) +/- 10%	ORP (mV) +/- 10 mV	Specific Conductance (mS/cm) +/- 3%	Temp (°C) +/- 3%	Turbidity (NTU) <10 NTU	Depth to water (feet)
7:46		250	7.53	9.04	202.2	0.520	7.99	0.0	3.44
7:51		250	7.53	8.94	196.6	0.494	8.15	0.0	3.44
7:56		250	7.64	8.90	191.5	0.478	8.36	0.0	3.44
8:01		250	7.70	8.89	185.7	0.472	8.50	0.0	3.44
8:06		250	7.73	8.85	181.1	0.471	8.51	0.0	3.44
8:11	N3	250	7.76	8.92	177.9	0.471	8.55	0.0	3.44
8:16		SAMPLED							

SAMPLING

Date: 12/4/2019 Time: 8:16
 Sample ID: OMC-MW-5285 Method of Sample Collection: grab

Analytical Parameters: VOCs, Metals, MNA

Q.C. Sample Type: N/A MS/MSD Duplicate Duplicate Sample ID:

Q.C. Parameters: N/A

Trash picked up? Y

Well locked? Y

SIGNED/SAMPLER: [Signature]

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: MW-528D Field Crew: K. Ma Purpose of Sampling: OMC Quarterly Sampling
Site: OMC Field Conditions: 35° Windy

WELL CONDITION

Well Pad	Acceptable	Not Acceptable	Explain:
Protective Casing	Acceptable	Not Acceptable	Explain:
Well Casing	Acceptable	Not Acceptable	Explain:
Locking Cap	Acceptable	Not Acceptable	Explain:
Well Label (outside)	Acceptable	Not Acceptable	Explain:
Well Label (inside)	Acceptable	Not Acceptable	Explain:
J-Plug	Acceptable	Not Acceptable	Explain:

PURGE METHOD

Date: 12/4/19 Time: 0740 Method: low-flow
Total Well Depth (ft) = 27.0
Depth to Water (ft): = 3.35
Water Column (ft): = 23.65 3.86
Comments: 1 volume

OBSERVATIONS

Odor: None Low High H₂S Fuel Like Other:

Comments: slightly cloudy during first ~15 mins

FIELD PARAMETERS

Time	Volume (gal)	Rate (mL/min)	pH (s.u.) +/- 0.1 s.u.	DO (mg/L) +/- 10%	ORP (mV) +/- 10 mV	Specific Conductance (mS/cm) +/- 3%	Temp (°C) +/- 3%	Turbidity (NTU) <10 NTU	Depth to water (feet)
0745	1	250	6.81	6.59	160.5	1.272	8.05	37.6	3.41
0750	1	250	6.88	7.13	141.6	1.214	10.19	19.4	3.41
0755	1	250	7.00	9.29	127.2	1.169	10.89	5.6	3.41
0800	1	250	7.03	9.30	123.4	1.160	10.94	2.5	3.41
0805	1	250	7.07	9.36	118.6	1.147	10.11	1.7	3.41
0810	1	250	7.08	9.41	115.8	1.140	11.05	2.2	3.41
0815	~3.5	250	7.08	9.41	115.7	1.139	11.05	2.1	3.41
— Sampled @ 0820									

SAMPLING

Date: 12/3 12/4/19 (KM) Time: 0820
Sample ID: OMC-MW-528D Method of Sample Collection: grab

Analytical Parameters: VOC, Dissolved metals, MNA

Q.C. Sample Type: N/A MS/MSD Duplicate Duplicate Sample ID: N/A

Q.C. Parameters: N/A

Trash picked up? ☒ Well locked? ☒

SIGNED/SAMPLER: Kam

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: MW-6005 Field Crew: C. Rasmussen Purpose of Sampling: OMC Quarterly Sampling
 Site: OMC Field Conditions: 30°F windy, partly cloudy

WELL CONDITION

Well Pad	<u>Acceptable</u>	Not Acceptable	Explain:
Protective Casing	<u>Acceptable</u>	Not Acceptable	Explain:
Well Casing	<u>Acceptable</u>	Not Acceptable	Explain:
Locking Cap	<u>Acceptable</u>	Not Acceptable	Explain:
Well Label (outside)	<u>Acceptable</u>	Not Acceptable	Explain:
Well Label (inside)	<u>Acceptable</u>	Not Acceptable	Explain:
J-Plug	<u>Acceptable</u>	Not Acceptable	Explain:

PURGE METHOD

Date: 12/6/19 Time: 9:10 Method: low-flow
 Total Well Depth (ft): = 10.60
 Depth to Water (ft): = 3.74
 Water Column (ft): = 6.86 1.1
 Comments: 1 volume

OBSERVATIONS

Odor: None Low High H₂S Fuel Like Other:

Comments: iron/orange colored water

FIELD PARAMETERS

Time	Volume (gal)	Rate (mL/min)	pH (s.u.) +/- 0.1 s.u.	DO (mg/L) +/- 10%	ORP (mV) +/- 10 mV	Specific Conductance (mS/cm) +/- 3%	Temp (°C) +/- 3%	Turbidity (NTU) <10 NTU	Depth to water (feet)
920	—	325	7.32	1.41	157.8	0.759	7.69	46.2	3.78
925	—	325	7.25	0.83	144.0	0.748	8.00	26.8	3.78
930	—	325	7.21	0.49	128.4	0.742	8.11	18.3	3.78
935	—	325	7.19	0.52	113.3	0.744	8.23	8.7	3.78
940	—	325	7.17	0.36	99.8	0.749	8.29	5.9	3.78
945	—	325	7.17	0.28	86.2	0.750	8.18	12.5	3.78
950	—	325	7.16	0.35	75.4	0.750	8.40	6.8	3.78
955	—	325	7.16	0.29	64.7	0.750	8.38	5.3	3.78
1000	—	325	7.15	0.22	55.4	0.754	8.39	3.0	3.78
1005	—	325	7.15	0.25	47.3	0.754	8.35	4.1	3.78
1010	—	325	7.14	0.23	38.9	0.755	8.50	0.6	3.78
1015	—	325	7.13	0.19	31.7	0.759	8.44	1.9	3.78

SAMPLING

Date: 12/6/19 Time: 10:50
 Sample ID: OMC-MW-6005 Method of Sample Collection: grab

Analytical Parameters: VOCs, dissolved metals, MNA

Q.C. Sample Type: NA MS/MSD Duplicate Duplicate Sample ID:

Q.C. Parameters: NA

Trash picked up? ✓ Well locked? ✓

SIGNED/SAMPLER: [Signature]

Page 2 of 2

Well Number: MW-6005	Field Crew: C. Reiss	Purpose of Sampling:	OMC Quarterly Sampling
Site: OMC	Field Conditions: Soft waxy, partly clay		
WELL CONDITION			

Well Pad	Acceptable	Not Acceptable	Explain:
Protective Casing	Acceptable	Not Acceptable	Explain:
Well Casing	Acceptable	Not Acceptable	Explain:
Locking Cap	Acceptable	Not Acceptable	Explain:
Well Label (outside)	Acceptable	Not Acceptable	Explain:
Well Label (inside)	Acceptable	Not Acceptable	Explain:
J-Plug	Acceptable	Not Acceptable	Explain:

Date:	Time:	Method:	low-flow
Total Well Depth (ft)	=	see page 1	
Depth to Water (ft):	=		
Water Column (ft):	=		
Comments:	1 volume		

Odor: None , Low , High , H₂S , Fuel Like , Other:

[illegible]

Date: 12/6/19 Time: 1050
Sample ID: OMC - MW - 600S Method of Sample Collection: grab
Analytical Parameters: VOC, dissolved metals, MNA
Q.C. Sample Type: NA MS/MSD Duplicate Duplicate Sample ID: NA
Q.C. Parameters: NA
Trash picked up? Y Well locked? Y
SIGNED/SAMPLER: [Signature]

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: MW-6000 Field Crew: K. Ma Purpose of Sampling: OMC Quarterly Sampling
 Site: OMC Field Conditions: 32°F Windy

WELL CONDITION

Well Pad	<u>Acceptable</u>	Not Acceptable	Explain: <u>muddy</u>
Protective Casing	<u>Acceptable</u>	Not Acceptable	Explain:
Well Casing	<u>Acceptable</u>	Not Acceptable	Explain:
Locking Cap	<u>Acceptable</u>	Not Acceptable	Explain:
Well Label (outside)	<u>Acceptable</u>	<u>Not Acceptable</u>	Explain: <u>No label</u>
Well Label (inside)	<u>Acceptable</u>	Not Acceptable	Explain:
J-Plug	<u>Acceptable</u>	Not Acceptable	Explain:

PURGE METHOD

Date: 12/6/19 Time: 9:07 Method: low-flow
 Total Well Depth (ft) = 25.13
 Depth to Water (ft): = 3.81
 Water Column (ft): = 21.32 3.48 3.5 (kw)
 Comments: 1 volume

OBSERVATIONS

Odor: None, Low, High, H₂S, Fuel Like, Other: fish
 Comments: black particles observed during ~5 mins of purge
- bubbles observed inflow through cell + purge bucket

FIELD PARAMETERS

Time	Volume (gal)	Rate (mL/min)	pH (s.u.) ±0.1 s.u.	DO (mg/L) ±10%	ORP (mV) ±10 mV	Specific Conductance (mS/cm) ±3%	Temp (°C) ±3%	Turbidity (NTU) <10 NTU	Depth to water (feet)
0920		225	7.66	5.98	211.2	1.725	9.41	5.0	4.10
0925		225	7.20	1.20	209.7	1.795	10.15	1.0	4.10
0930		225	7.13	1.13	205.8	1.828	10.44	0	4.10
0935		225	7.13	1.67	203.6	1.836	10.50	0	4.10
0940		225	7.09	0.65	201.3	1.846	10.77	0	4.10
0945		225	7.08	3.00	199.1	1.855	10.23	0	3.98
0950		225	7.04	2.92	199.7	1.843	10.38	0	3.98
0955		225	7.04	2.54	199.6	1.844	10.41	0	3.98
1000	<u>✓</u>	225	7.03	2.61	199.6	1.849	10.41	0	3.98
1005	<u>N4</u>	225	7.05	2.60	199.6	1.850	10.33	0	3.98
<u>Sampled @ 1010</u>									

SAMPLING

Date: 12/6/19 Time: 1010
 Sample ID: OMC-MW-6000 Method of Sample Collection: grab
 Analytical Parameters: VOC, MNA, dissolved metals
 Q.C. Sample Type: N/A MS/MSD Duplicate Duplicate Sample ID: N/A
 Q.C. Parameters: N/A
 Trash picked up? 4 Well locked? 4
 SIGNED/SAMPLER: [Signature]

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: **MW6015** Field Crew: **K. Wilson** Purpose of Sampling: **OMC Quarterly Sampling**
 Site: **OMC** Field Conditions: **31°F, windy, cloudy**

WELL CONDITION

Well Pad	Acceptable	Not Acceptable	Explain: under water
Protective Casing	Acceptable	Not Acceptable	Explain:
Well Casing	Acceptable	Not Acceptable	Explain:
Locking Cap	Acceptable	Not Acceptable	Explain:
Well Label (outside)	Acceptable	Not Acceptable	Explain:
Well Label (inside)	Acceptable	Not Acceptable	Explain:
J-Plug	Acceptable	Not Acceptable	Explain:

PURGE METHOD

Date: **12/2/19** Time: **1340** Method: **low-flow per**
 Total Well Depth (ft) = **10.65**
 Depth to Water (ft): = **39.33**
 Water Column (ft): = **7.32** **1.2**
 Comments: **1 volume**

OBSERVATIONS

Odor: **None**, Low, High, H₂S, Fuel Like, Other:
 Comments: **orange turbid water in first couple minutes of purging**

FIELD PARAMETERS

Time	Volume (gal)	Rate (mL/min)	pH (s.u.) +/- 0.1 s.u.	DO (mg/L) +/- 10%	ORP (mV) +/- 10 mV	Specific Conductance (mS/cm) +/- 3%	Temp (°C) +/- 3%	Turbidity (NTU) <10 NTU	Depth to water (feet) (K)
1345	1	300	7.15	6.16	-56.3	0.955	6.34	7.8	39.32
1350		300	7.14	1.89	-78.8	0.965	7.33	30	39.38
1355		400	7.19	0.92	-89.5	0.973	7.77	13.5	34.0
1400		400	7.26	0.58	-98.6	0.965	8.07	2.0	3.40
1405		400	7.29	0.42	-104.4	0.946	8.04	1.3	3.40
1410		400	7.32	0.36	-104.8	0.909	8.13	0.0	3.41
1415		400	7.37	0.29	-112.2	0.889	8.09	0.0	3.41
1420	↓	400	7.39	0.28	-111.2	0.868	8.05	0.0	3.42
1425	N5	400	7.41	0.24	-112.7	0.854	8.15	0.0	3.42

SAMPLING

Date: **12/2/19** Time: **1426**
 Sample ID: **OMC-MW-6015** Method of Sample Collection: **grab**
 Analytical Parameters: **Anions / TOC / Sulfide, total & dissolved metals, VOCs, MEE**
 Q.C. Sample Type: **MS/MSD** Duplicate Duplicate Sample ID:
 Q.C. Parameters: **All**
 Trash picked up? **Y** Well locked? **Y**
 SIGNED/SAMPLER: **[Signature]**

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: MW-6010 Field Crew: 5611KW Purpose of Sampling: OMC Quarterly Sampling
 Site: OMC Field Conditions: 30°F Overcast

WELL CONDITION

Well Pad	<u>Acceptable</u>	Not Acceptable	Explain:
Protective Casing	<u>Acceptable</u>	Not Acceptable	Explain:
Well Casing	<u>Acceptable</u>	Not Acceptable	Explain:
Locking Cap	<u>Acceptable</u>	Not Acceptable	Explain:
Well Label (outside)	<u>Acceptable</u>	Not Acceptable	Explain:
Well Label (inside)	<u>Acceptable</u>	Not Acceptable	Explain:
J-Plug	<u>Acceptable</u>	Not Acceptable	Explain:

PURGE METHOD

Date: 12/2/19 Time: 1332 Method: low-flow
 Total Well Depth (ft) = 24.97
 Depth to Water (ft): = 3.21
 Water Column (ft): = 21.76 3.5
 Comments: 1 volume

OBSERVATIONS

Odor: None Low High H₂S Fuel Like Other:

Comments: Black particulates @ Start of purge, cleared up in < 5 min

FIELD PARAMETERS

Time	Volume (gal)	Rate (mL/min)	pH (s.u.) ±0.1 s.u.	DO (mg/L) <u>5.9</u> ±10%	ORP (mV) ±10 mV	Specific Conductance (mS/cm) ±3%	Temp (°C) ±3%	Turbidity (NTU) <10 NTU	Depth to water (feet)
<u>1350</u>	<u>0.2</u>	<u>150</u>	<u>6.60</u>	<u>9.5</u>	<u>-1.04</u>	<u>1.988</u>	<u>9.60</u>	<u>1.8</u>	<u>3.28</u>
<u>1355</u>	<u>0.4</u>	<u>150</u>	<u>6.59</u>	<u>6.5</u>	<u>-0.72</u>	<u>2.038</u>	<u>9.33</u>	<u>7.7</u>	<u>3.29</u>
<u>1400</u>	<u>0.6</u>	<u>150</u>	<u>6.58</u>	<u>4.2</u>	<u>-0.47</u>	<u>2.044</u>	<u>9.39</u>	<u>7.8</u>	<u>3.29</u>
<u>1405</u>	<u>0.8</u>	<u>150</u>	<u>6.56</u>	<u>3.8</u>	<u>-0.43</u>	<u>2.067</u>	<u>9.38</u>	<u>4.5</u>	<u>3.29</u>
<u>1410</u>	<u>1.0</u>	<u>150</u>	<u>6.53</u>	<u>0.29</u>	<u>-90.2</u>	<u>2.098</u>	<u>9.41</u>	<u>4.0</u>	<u>3.29</u>
<u>1415</u>	<u>1.2</u>	<u>150</u>	<u>6.48</u>	<u>0.23</u>	<u>-88.5</u>	<u>2.161</u>	<u>9.31</u>	<u>2.3</u>	<u>3.29</u>
<u>1420</u>	<u>1.4</u>	<u>150</u>	<u>6.45</u>	<u>0.21</u>	<u>-87.3</u>	<u>2.204</u>	<u>9.23</u>	<u>2.2</u>	<u>3.29</u>
<u>1425</u>	<u>1.6</u>	<u>150</u>	<u>6.43</u>	<u>0.20</u>	<u>-86.9</u>	<u>2.227</u>	<u>9.40</u>	<u>2.1</u>	<u>3.29</u>
<u>1430</u>	<u>1.8</u>	<u>150</u>	<u>6.42</u>	<u>0.17</u>	<u>-97.1</u>	<u>2.247</u>	<u>9.49</u>	<u>2.2</u>	<u>3.29</u>
<u>1435 SAMPLE</u>									

SAMPLING

Date: 12/2/19 Time: 1435
 Sample ID: OMC-MW-6010 Method of Sample Collection: grab

Analytical Parameters: VOCs MNA, Dissolved metals
 Q.C. Sample Type: NA MS/MSD Duplicate Duplicate Sample ID: NA

Q.C. Parameters: NA

Trash picked up? Y Well locked? Y

SIGNED/SAMPLER: [Signature]

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: MW-602S Field Crew: L. Schaefer Purpose of Sampling: OMC Quarterly Sampling
 Site: OMC Field Conditions: Sunny 32°F

WELL CONDITION

Well Pad	Acceptable	Not Acceptable	Explain:
Protective Casing	Acceptable	Not Acceptable	Explain:
Well Casing	Acceptable	Not Acceptable	Explain:
Locking Cap	Acceptable	Not Acceptable	Explain: NO LOCKS
Well Label (outside)	Acceptable	Not Acceptable	Explain:
Well Label (inside)	Acceptable	Not Acceptable	Explain:
J-Plug	Acceptable	Not Acceptable	Explain:

PURGE METHOD

Date: 12/4/19 Time: 9:05 Method: low-flow
 Total Well Depth (ft) = 9.26
 Depth to Water (ft) = 2.94
 Water Column (ft) = 6.32 1.0

Comments:

1 volume

OBSERVATIONS

Odor: None, Low, High, H₂S, Fuel Like, Other:

Comments: EMPTIED FLOW THROUGH CELL @ 9:34 AND BEGAN PUMPING 1 MINUTE LATER
 DUE TO TURBIDITY

FIELD PARAMETERS

Time	Volume (gal)	Rate (mL/min)	pH (s.u.) ±0.1 s.u.	DO (mg/L) ±10%	ORP (mV) ±10 mV	Specific Conductance (mS/cm) ±3%	Temp (°C) ±3%	Turbidity (NTU) ≤10 NTU	Depth to water (feet)
9:10		200	7.58	1.94	187.4	0.544	7.11	2.0	2.30
9:15		240	7.48	0.91	181.5	0.548	7.52	0.0	2.32
9:20		240	7.40	2.23	174.3	0.539	8.22	2.1	2.32
9:25		320	7.37	1.14	164.6	0.543	8.54	0.5	2.32
9:30		320	7.38	0.61	148.6	0.546	7.92	35.2	2.32
9:35		320	7.39	10.33	132.6	0.512	8.18	0.0	2.98
9:40		320	7.36	0.87	119.3	0.535	8.95	18.2	3.02
9:45		300	7.33	0.38	96.1	0.536	8.92	10.8	3.02
9:50		300	7.33	0.22	75.2	0.535	8.94	3.9	3.02
9:55		300	7.33	0.36	57.2	0.535	8.98	1.2	3.02
10:00		300	7.32	0.18	38.2	0.535	8.98	0.0	3.02
10:05	✓	360	7.32	0.16	21.3	0.524	9.22	0.0	3.02

SAMPLING

Date: 12/4/19 Time: 1055
 Sample ID: OMC-MW-602S Method of Sample Collection: grab

Analytical Parameters: VOCs, MNA, Metals

Q.C. Sample Type: N/A MS/MSD Duplicate Duplicate Sample ID: N/A

Q.C. Parameters: N/A

Trash picked up? Y Well locked? Y

SIGNED/SAMPLER:

Laci Schaefer

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: **MW-602S** Field Crew: **L. SCHARCH** Purpose of Sampling: **OMC Quarterly Sampling**
 Site: **OMC** Field Conditions:

WELL CONDITION

	Acceptable	Not Acceptable	Explain:
Well Pad			
Protective Casing			
Well Casing			
Locking Cap			
Well Label (outside)			
Well Label (inside)			
J-Plug			

SEE PG. 1

PURGE METHOD

Date: Time: Method: low-flow

Total Well Depth (ft) =

Depth to Water (ft): =

Water Column (ft): =

SEE PG. 1

Comments: 1 volume

OBSERVATIONS

Odor: None, Low, High, H₂S, Fuel Like, Other:

Comments:

FIELD PARAMETERS

Time	Volume (gal)	Rate (mL/min)	pH (s.u.) ± 0.1 s.u.	DO (mg/L) ± 10%	ORP (mV) ± 10 mV	Specific Conductance (mS/cm) ± 3%	Temp (°C) ± 3%	Turbidity (NTU) <10 NTU	Depth to water (feet)
10:10		300	7.31	0.36	7.9	0.534	9.31	0.0	3.02
10:15		300	7.32	0.16	-5.2	0.534	9.39	0.0	3.02
10:20		240	7.31	0.15	-12.8	0.535	9.34	0.0	3.02
10:25		240	7.31	0.16	-22.7	0.536	9.31	0.0	3.02
10:30		240	7.31	0.23	-29.2	0.536	9.21	0.0	3.02
10:35		240	7.31	0.14	-40.3	0.537	9.32	0.0	3.02
10:40		240	7.32	0.33	-43.9	0.538	9.32	0.0	3.02
10:45	✓	240	7.31	0.23	-47.3	0.538	9.28	0.0	3.02
10:50	N8	240	7.29	0.23	-52.2	0.537	9.25	0.0	3.02
10:55	Sampled @ 10:55								

SAMPLING

Date: 12/4/2019

Time: 10:55

Sample ID:

Method of Sample Collection: grab

see pg 1

Analytical Parameters:

Q.C. Sample Type: MS/MSD Duplicate Duplicate Sample ID:

Q.C. Parameters:

Trash picked up?

Well locked?

SIGNED/SAMPLER:

Laci Scharch

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: MW-602D Field Crew: L.Mn Purpose of Sampling: OMC Quarterly Sampling
 Site: OMC Field Conditions: 35°F Windy

WELL CONDITION

Well Pad	<u>Acceptable</u>	Not Acceptable	Explain:
Protective Casing	<u>Acceptable</u>	Not Acceptable	Explain:
Well Casing	<u>Acceptable</u>	Not Acceptable	Explain:
Locking Cap	<u>Acceptable</u>	<u>Not Acceptable</u>	Explain: <u>no lock</u>
Well Label (outside)	<u>Acceptable</u>	Not Acceptable	Explain:
Well Label (inside)	<u>Acceptable</u>	Not Acceptable	Explain:
J-Plug	<u>Acceptable</u>	Not Acceptable	Explain:

PURGE METHOD

Date: 12/4/19 Time: 0905 Method: low-flow
 Total Well Depth (ft): = 25.92
 Depth to Water (ft): = 3.14
 Water Column (ft): = 22.78 3.7
 Comments: 1 volume

OBSERVATIONS

Odor: None, Low, High, H₂S, Fuel Like, Other:
 Comments: black suspended particles first ~15 mins of purge

FIELD PARAMETERS

Time	Volume (gal)	Rate (mL/min)	pH (s.u.) +/- 0.1 s.u.	DO (mg/L) +/- 10%	ORP (mV) +/- 10 mV	Specific Conductance (mS/cm) +/- 3%	Temp (°C) +/- 3%	Turbidity (NTU) <10 NTU	Depth to water (feet)
0910		250	7.68	2.11	-28.3	2.461	10.96	0	3.20
0915		250	7.73	1.74	-111.7	2.497	11.22	0	3.20
0920		250	7.55	1.50	-157.7	2.534	11.31	0	3.20
0925		250	7.52	1.45	-150.3	2.541	11.76	0	3.20
0930		250	7.48	1.40	-162.8	2.553	11.79	0	3.20
0935		250	7.44	1.34	-163.9	2.573	11.84	0	3.20
0940		250	7.44	1.31	-163.8	2.583	11.80	0	3.20
0945	<u>~3.5</u>	250	7.43	1.31	-163.8	2.583	11.85	0	3.20
0950	<u>Sampled @ 0950 + 0955</u>								

SAMPLING

Date: 12/4/19 Time: 0950 + 0955 (FD)
 Sample ID: MW-OMC-MW-602D Method of Sample Collection: grab
 Analytical Parameters: (602D) VOC, MNA, Dissolved metals
 Q.C. Sample Type: MS/MSD Duplicate Duplicate Sample ID: OMC-MW-620D-R
 Q.C. Parameters: VOC, MNA, dissolved metals
 Trash picked up? Y Well locked? Y
 SIGNED/SAMPLER: [Signature]

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: MW-603S

Field Crew: L. SCHARCH

Purpose of Sampling:

OMC Quarterly Sampling

Site: OMC

Field Conditions: CLOUDY 43°F

WELL CONDITION

Well Pad	Acceptable	Not Acceptable	Explain:
Protective Casing	Acceptable	Not Acceptable	Explain:
Well Casing	Acceptable	Not Acceptable	Explain:
Locking Cap	Acceptable	Not Acceptable	Explain:
Well Label (outside)	Acceptable	Not Acceptable	Explain:
Well Label (inside)	Acceptable	Not Acceptable	Explain:
J-Plug	Acceptable	Not Acceptable	Explain:

~ 3 inches of standing water around well nest

PURGE METHOD

Date: 12/5/2019 Time: 12:52

Method: low-flow

Total Well Depth (ft) = 10.96

Depth to Water (ft): = 3.23

Water Column (ft): = 7.73

1.3

1 volume

Comments:

OBSERVATIONS

Odor: None, (Low), High, H₂S, Fuel Like, Other:

Comments:

FIELD PARAMETERS

Time	Volume (gal)	Rate (mL/min)	pH (s.u.)	DO (mg/L)	ORP (mV)	Specific Conductance (mS/cm)	Temp (°C)	Turbidity (NTU)	Depth to water (feet)
			± 0.1 s.u.	± 10%	± 10 mV	± 3%	± 3%	< 10 NTU	
12:55		280	7.96	1.23	199.1	0.464	8.02	19.9	3.28
13:00		280	7.71	0.64	218.2	0.454	7.99	10.5	3.28
13:05		280	7.56	0.40	222.4	0.445	8.16	4.6	3.24
13:10		280	7.48	0.34	223.2	0.437	8.19	3.2	3.24
13:15		280	7.42	0.28	223.0	0.433	8.19	1.4	3.24
13:20		280	7.39	0.25	222.4	0.435	8.25	0.8	3.24
13:25		280	7.34	0.24	221.8	0.437	8.35	0.5	3.24
13:30	N3	280	7.33	0.23	221.3	0.439	8.37	0.0	3.24
13:35		SAMPLED							

SAMPLING

Date: 12/5/2019

Time: 13:35

Sample ID: OMC-MW-603S

Method of Sample Collection: grab

Analytical Parameters: VOCs, Metals, MNA

Q.C. Sample Type: N/A MS/MSD Duplicate Duplicate Sample ID: N/A

Q.C. Parameters: N/A

Trash picked up? ☒

Well locked? ☒

SIGNED/SAMPLER:

Laci Scharch

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: **MW-603D** Field Crew: **K. Ma** Purpose of Sampling: **OMC Quarterly Sampling**
 Site: **OMC** Field Conditions: **40°F Sunny**

WELL CONDITION

Well Pad	Acceptable	Not Acceptable	Explain:
Protective Casing	Acceptable	Not Acceptable	Explain:
Well Casing	Acceptable	Not Acceptable	Explain:
Locking Cap	Acceptable	Not Acceptable	Explain:
Well Label (outside)	Acceptable	Not Acceptable	Explain:
Well Label (inside)	Acceptable	Not Acceptable	Explain:
J-Plug	Acceptable	Not Acceptable	Explain:

N 3 inches of standing water around well nest

PURGE METHOD

Date: **12/5/19** Time: **1250** Method: **low-flow**
 Total Well Depth (ft): **= 26.59**
 Depth to Water (ft): **= 2.88**
 Water Column (ft): **= 23.71** **3.9**
 Comments: **1 volume**

OBSERVATIONS

Odor: **None** **Low** **High** **H₂S** Fuel Like Other:
 Comments:

FIELD PARAMETERS

Time	Volume (gal)	Rate (mL/min)	pH (s.u.) ±0.1 s.u.	DO (mg/L) ±10%	ORP (mV) ±10 mV	Specific Conductance (mS/cm) ±3%	Temp (°C) ±3%	Turbidity (NTU) ≤10 NTU	Depth to water (feet)
1255	1	250	6.32	2.53	55.4	2.795	11.78	5.3	4.52
1300	1	250	6.11	2.94	26.3	2.810	11.78	7.3	4.52
km 1305	SENSOR 1 SWEET - PAUSED TO CLEAN PROBES								
1315	1	250	5.90	0.52	3.3	3.011	11.34	2.3	5.01
1320	1	250	5.90	0.70	-30.7	2.977	11.41	0	5.01
1325	1	250	5.90	0.73	-37.1	2.981	11.39	0	5.01
1330	1	250	5.91	0.50	-42.1	2.977	11.36	0	4.80
1335	✓	250	5.89	0.51	-51.6	2.992	11.25	0	4.80
1340	N4	250	5.89	0.50	-51.2	2.997	11.17	0	4.80
Sampled @ 1345									

SAMPLING

Date: **12/5/19** Time: **1345**
 Sample ID: **OMC-MW-603D** Method of Sample Collection: **grab**
 Analytical Parameters: **VOC, Dissolved Metals, MNA**
 Q.C. Sample Type: **N/A** MS/MSD Duplicate Duplicate Sample ID: **N/A**
 Q.C. Parameters: **N/A**

Trash picked up? Well locked?

SIGNED/SAMPLER:

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: MW-6045 Field Crew: SH/KL Purpose of Sampling: OMC Quarterly Sampling
 Site: OMC Field Conditions: 35°F Overcast

WELL CONDITION

Well Pad	<u>Acceptable</u>	Not Acceptable	Explain:
Protective Casing	<u>Acceptable</u>	Not Acceptable	Explain:
Well Casing	<u>Acceptable</u>	Not Acceptable	Explain:
Locking Cap	<u>Acceptable</u>	Not Acceptable	Explain:
Well Label (outside)	<u>Acceptable</u>	Not Acceptable	Explain:
Well Label (inside)	<u>Acceptable</u>	Not Acceptable	Explain:
J-Plug	<u>Acceptable</u>	Not Acceptable	Explain:

PURGE METHOD

Date: 12/5/19 Time: 1415 Method: low-flow
 Total Well Depth (ft) = 10.68
 Depth to Water (ft): = 2.64
 Water Column (ft): = 8.04 1.3
 Comments: 1 volume

OBSERVATIONS

Odor: None, Low, High, H₂S, Fuel Like, Other:

Comments: cloudy @ start of purge

FIELD PARAMETERS

Time	Volume (gal)	Rate (mL/min)	pH (s.u.) ± 0.1 s.u.	DO (mg/L) ± 10%	ORP (mV) ± 10 mV	Specific Conductance (mS/cm) ± 3%	Temp (°C) ± 3%	Turbidity (NTU) <10 NTU	Depth to water (feet)
1430	0.4	400	7.37	4.84	57.6	1.037	8.34	540	2.70
1435	0.8	400	7.07	0.44	-112.6	1.048	9.47	313	2.70
1440	1.2	400	7.06	0.33	-112.7	1.046	8.52	21.5	2.70
1445	1.6	400	7.05	0.20	-115.9	1.041	8.55	12.0	2.70
1450	2.0	400	7.05	0.18	-116.2	1.044	8.60	9.6	2.70
1455	2.4	400	7.05	0.15	-116.4	1.044	8.65	5.4	2.70
1500	2.8	400	7.05	0.13	-117.7	1.040	8.60	3.9	2.70
1505	<u>SAMPLE</u>								

SAMPLING

Date: 12/5/19 Time: 1505
 Sample ID: OMC-MW-6045 Method of Sample Collection: grab

Analytical Parameters: UOL, MNA, DISSMET

Q.C. Sample Type: N/A MS/MSD Duplicate Duplicate Sample ID: N/A

Q.C. Parameters: N/A

Trash picked up? Well locked?

SIGNED/SAMPLER: [Signature]

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: MW 604D Field Crew: K. Wilson Purpose of Sampling: OMC Quarterly Sampling
 Site: OMC Field Conditions: 35°F, cloudy, slight wind

WELL CONDITION

Well Pad	Acceptable	<u>Not Acceptable</u>	Explain:
Protective Casing	<u>Acceptable</u>	Not Acceptable	Explain:
Well Casing	<u>Acceptable</u>	Not Acceptable	Explain:
Locking Cap	<u>Acceptable</u>	Not Acceptable	Explain:
Well Label (outside)	Acceptable	<u>Not Acceptable</u>	Explain:
Well Label (inside)	<u>Acceptable</u>	Not Acceptable	Explain:
J-Plug	<u>Acceptable</u>	Not Acceptable	Explain:

PURGE METHOD

Date: 12-5-19 Time: 1412 Method: low-flow
 Total Well Depth (ft) = 30.05
 Depth to Water (ft): = 2.88
 Water Column (ft): = 27.17 4.4
 Comments: 1 volume

OBSERVATIONS

Odor: None, Low, High H₂S, Fuel Like Other:
 Comments: grey water, small black particles, bubbly (605D was also bubbly)
draws down if increased

FIELD PARAMETERS

Time	Volume (gal)	Rate (mL/min)	pH (s.u.) ±0.1 s.u.	DO (mg/L) ±10%	ORP (mV) ±10 mV	Specific Conductance (mS/cm) ±3%	Temp (°C) ±3%	Turbidity (NTU) <10 NTU	Depth to water (feet)
1430		200	6.86	3.17	-88.2	3.341	11.13	14.8	3.88
1435		200	6.30	1.36	-87.3	3.054	11.34	8.1	3.85
1440		200	6.23	1.12	-76.8	2.984	11.10	7.7	3.84
1445		200	6.21	1.03	-73.8	2.943	11.18	6.2	3.83
1450		200	6.18	0.94	-71.0	2.891	11.28	5.4	3.83
1455	✓	200	6.17	0.90	-70.6	2.876	11.16	7.6	3.84
1500	~3	200	6.17	0.86	-70.7	2.857	11.26	7.4	3.85

SAMPLING

Date: 12-5-19 Time: 1501
 Sample ID: OMC-MW-604D Method of Sample Collection: grab
 Analytical Parameters: Alkalinity, Anions, sulfide, dissolved metals, total TDC, MEE, VOC
 Q.C. Sample Type: NA MS/MSD Duplicate Duplicate Sample ID:
 Q.C. Parameters: NA
 Trash picked up? Y Well locked? Y
 SIGNED/SAMPLER: [Signature]

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: MW-6055 Field Crew: SH/KW Purpose of Sampling: OMC Quarterly Sampling
 Site: OMC Field Conditions: 38°F Overcast

WELL CONDITION

Well Pad	<u>Acceptable</u>	Not Acceptable	Explain:
Protective Casing	<u>Acceptable</u>	Not Acceptable	Explain:
Well Casing	<u>Acceptable</u>	Not Acceptable	Explain:
Locking Cap	<u>Acceptable</u>	Not Acceptable	Explain:
Well Label (outside)	<u>Acceptable</u>	Not Acceptable	Explain:
Well Label (inside)	<u>Acceptable</u>	Not Acceptable	Explain:
J-Plug	<u>Acceptable</u>	Not Acceptable	Explain:

PURGE METHOD

Date: 12/5/19 Time: 1255 Method: low-flow
 Total Well Depth (ft) = 10.73
 Depth to Water (ft): = 4.40
 Water Column (ft): = 6.33 1.0
 Comments: 1 volume

OBSERVATIONS

Odor: None Low High H₂S Fuel Like Other:
 Comments:

FIELD PARAMETERS

Time	Volume (gal)	Rate (mL/min)	pH (s.u.) +/- 0.1 s.u.	DO (mg/L) +/- 10%	ORP (mV) +/- 10 mV	Specific Conductance (mS/cm) +/- 3%	Temp (°C) +/- 3%	Turbidity (NTU) ≤10 NTU	Depth to water (feet)
1300	0.5	425	7.30	11.66	24.4	0.810	9.04	65.4	4.50
1305	1.1	425	7.17	0.57	-39.5	0.800	9.02	36.0	4.52
1310	1.6	425	7.12	0.30	-73.1	0.773	9.02	12.4	4.52
1315	2.2	425	7.12	0.23	-84.8	0.752	8.99	3.1	4.52
1320	2.7	425	7.13	0.19	-94.2	0.730	8.97	2.8	4.52
1325	3.3	425	7.14	0.16	-93.3	0.717	8.94	0.0	4.52
1330	3.8	425	7.14	0.15	-100.0	0.712	8.93	3.7	4.52
1335	SAMPLE								

SAMPLING

Date: 12/5/19 Time: 1335
 Sample ID: OMC-MW-6055 Method of Sample Collection: grab
 Analytical Parameters: VOCs, MNA, Diss Met.
 Q.C. Sample Type: N/A MS/MSD Duplicate Duplicate Sample ID: N/A
 Q.C. Parameters: N/A

Trash picked up? Y Well locked? Y
 SIGNED/SAMPLER: [Signature]

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: **MW 605 D**

Field Crew: **K. Wilson**

Purpose of Sampling:

OMC Quarterly Sampling

Site: OMC

Field Conditions: **38°F, cloudy**

WELL CONDITION

Well Pad	Acceptable	Not Acceptable	Explain: NA
Protective Casing	Acceptable	Not Acceptable	Explain:
Well Casing	Acceptable	Not Acceptable	Explain:
Locking Cap	Acceptable	Not Acceptable	Explain:
Well Label (outside)	Acceptable	Not Acceptable	Explain:
Well Label (inside)	Acceptable	Not Acceptable	Explain:
J-Plug	Acceptable	Not Acceptable	Explain:

PURGE METHOD

Date: **12-5-19** Time: **1250** Method: **low-flow**

Total Well Depth (ft) = **27.21**

Depth to Water (ft): = **4.45**

Water Column (ft): = **22.76** **3.7**

Comments:

1 volume

OBSERVATIONS

Odor: **None**, Low, High, H₂S, Fuel Like, Other:

Comments: **black specks in water**

or 10%

FIELD PARAMETERS

Time	Volume (gal)	Rate (mL/min)	pH (s.u.) +/- 0.1 s.u.	DO (mg/L) +/- 10%	ORP (mV) +/- 10 mV	Specific Conductance (mS/cm) +/- 3%	Temp (°C) +/- 3%	Turbidity (NTU) ≤10 NTU	Depth to water (feet)
1300	0.5	400	6.23	2.42	-16.7	2.714	12.75	11.9	4.95
1305	1.0	400	6.13	1.54	-44.2	2.754	12.81	29.9	4.91
1310	1.5	400	6.12	1.18	-64.2	2.761	12.85	25.8	4.95
1315	2.0	400	6.08	1.00	-82.1	2.679	12.89	28.4	4.95
1320	2.5	400	6.11	0.92	-86.8	2.715	12.91	27.2	4.95
1325	3.0	400	6.10	0.86	-88.1	2.712	12.83	32.9	4.96
1330	3.5	400	6.11	0.83	-90.4	2.698	12.82	3.5	4.96
1335	4.0	400	6.11	0.81	-90.2	2.691	12.80	3.8	4.95
1340	4.5	400	6.11	0.79	-88.4	2.677	12.82	3.9	4.95

SAMPLING

Date: **12-5-19**

Time: **1341**

Sample ID: **OMC-MW-605D**

Method of Sample Collection: **grab**

Analytical Parameters: **Alkalinity/Anions, Sulfide, TOC, MEE, VOC, dissolved metals**

Q.C. Sample Type:

MS/MSD

Duplicate

Duplicate Sample ID: **OMC-MW-605D-R** **Time 1344**

Q.C. Parameters:

Same as analytical

Trash picked up? **Y**

Well locked? **Y**

SIGNED/SAMPLER:

[Signature]

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: MW-6065 Field Crew: SG/KW Purpose of Sampling: OMC Quarterly Sampling
 Site: OMC Field Conditions: 30°F Overcast W. Winds

WELL CONDITION

Well Pad	<u>Acceptable</u>	Not Acceptable	Explain:
Protective Casing	<u>Acceptable</u>	Not Acceptable	Explain:
Well Casing	<u>Acceptable</u>	Not Acceptable	Explain:
Locking Cap	<u>Acceptable</u>	Not Acceptable	Explain:
Well Label (outside)	<u>Acceptable</u>	Not Acceptable	Explain:
Well Label (inside)	<u>Acceptable</u>	Not Acceptable	Explain:
J-Plug	<u>Acceptable</u>	Not Acceptable	Explain: <u>5-Plug to fall cannot lock well</u>

p. 1 of 2

PURGE METHOD

Date: 12/5/19 Time: 0720 Method: low-flow
 Total Well Depth (ft): = 9.82
 Depth to Water (ft): = 4.18
 Water Column (ft): = 5.64 0.92
 Comments: 1 volume

OBSERVATIONS

Odor: None , Low , High , H₂S , Fuel Like , Other:

Comments: cloudy @ start of purge

FIELD PARAMETERS

Time	Volume (gal)	Rate (mL/min)	pH (s.u.) +/- 0.1 s.u.	DO (mg/L) +/- 10%	ORP (mV) +/- 10 mV	Specific Conductance (mS/cm) +/- 3%	Temp (°C) +/- 3%	Turbidity (NTU) <10 NTU	Depth to water (feet)
0730	0.4	400	6.55	9.84	167.2	0.648	6.99	59.8	4.69
0735	0.8	400	7.20	0.94	147.3	0.648	7.17	201	4.68
0740	1.2	400	7.55	0.54	102.9	0.650	7.31	3.4	4.68
0745	1.6	400	7.72	0.32	91.1	0.650	7.38	0.2	4.68
0750	2.0	400	7.85	0.25	76.4	0.652	7.32	0.0	4.65
0755	2.5	450	7.93	0.21	57.8	0.652	7.58	0.0	4.68
0800	3.0	450	8.00	0.18	47.4	0.652	7.80	0.3	4.73
0805	3.5	450	8.05	0.16	28.3	0.653	8.00	1.5	4.74
0810	4.0	450	8.08	0.15	2.4	0.653	8.03	0.5	4.75
0815	4.5	450	8.10	0.14	-12.2	0.654	8.08	0.0	4.75
0820	5.0	450	8.11	0.12	-28.4	0.654	8.17	0.1	4.76
0825	5.5	450	8.12	0.11	-34.9	0.654	8.23	0.0	4.77

SAMPLING

Date: 12/5/19 Time: 0855
 Sample ID: OMC-MW-6065 Method of Sample Collection: grab

Analytical Parameters: VOCs, MNA, Diss. Met.

Q.C. Sample Type: N/A MS/MSD Duplicate Duplicate Sample ID: N/A

Q.C. Parameters: N/A

Trash picked up? ✓ Well locked? ✓

SIGNED/SAMPLER: [Signature]

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: **MW-6065**

Field Crew:

Purpose of Sampling:

OMC Quarterly Sampling

Site: OMC

Field Conditions:

WELL CONDITION

Well Pad	Acceptable	Not Acceptable	Explain:
Protective Casing	Acceptable	Not Acceptable	Explain:
Well Casing	Acceptable	Not Acceptable	Explain:
Locking Cap	Acceptable	Not Acceptable	Explain:
Well Label (outside)	Acceptable	Not Acceptable	Explain:
Well Label (inside)	Acceptable	Not Acceptable	Explain:
J-Plug	Acceptable	Not Acceptable	Explain:

P. 2 of 2

See Pg 1

PURGE METHOD

Date: Time: Method: low-flow

Total Well Depth (ft) =

Depth to Water (ft) =

Water Column (ft) =

See Pg 1

Comments:

1 volume

OBSERVATIONS

Odor: None , Low , High , H₂S , Fuel Like , Other:

Comments:

FIELD PARAMETERS

Time	Volume (gal)	Rate (mL/min)	pH (s.u.) +/- 0.1 s.u.	DO (mg/L) +/- 10%	ORP (mV) +/- 10 mV	Specific Conductance (mS/cm) +/- 3%	Temp (°C) +/- 3%	Turbidity (NTU) <10 NTU	Depth to water (feet)
0830	6.0	450	8.11	0.11	-40.7	0.654	8.25	0.5	4.75
0835	6.5	450	8.13	0.11	-49.7	0.656	8.13	0.0	4.74
0840	7.0	450	8.13	0.10	-56.0	0.657	8.16	0.0	4.75
0845	7.5	450	8.14	0.10	-61.7	0.658	8.22	0.5	4.75
0850	8.0	450	8.14	0.10	-63.4	0.658	8.09	0.6	4.75
0855	SAMPLE								

SAMPLING

Date: 14/5/

Time:

Sample ID:

Method of Sample Collection: grab

Analytical Parameters:

Q.C. Sample Type:

MS/MSD

Duplicate

Duplicate Sample ID:

Q.C. Parameters:

Trash picked up?

Well locked?

SIGNED/SAMPLER:

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: **MW 606D** Field Crew: **K. Wilson** Purpose of Sampling: **OMC Quarterly Sampling**
 Site: **OMC** Field Conditions: **32°F, windy, cloudy**

WELL CONDITION

Well Pad	<u>Acceptable</u>	Not Acceptable	Explain:
Protective Casing	<u>Acceptable</u>	Not Acceptable	Explain:
Well Casing	<u>Acceptable</u>	Not Acceptable	Explain:
Locking Cap	<u>Acceptable</u>	Not Acceptable	Explain:
Well Label (outside)	Acceptable	<u>Not Acceptable</u>	Explain:
Well Label (inside)	<u>Acceptable</u>	Not Acceptable	Explain:
J-Plug	<u>Acceptable</u>	Not Acceptable	Explain:

PURGE METHOD

Date: **12-6-19** Time: **0715** Method: **low-flow**
 Total Well Depth (ft): **= 2786**
 Depth to Water (ft): **= 4.14**
 Water Column (ft): **= 2367** **39**
 Comments: **1 volume**

OBSERVATIONS

Odor: None, Low, High, H₂S, Fuel Like, Other:

Comments: **dark grey; black specks in water, bio film on water.**

FIELD PARAMETERS

Time	Volume (gal)	Rate (mL/min)	pH <input checked="" type="checkbox"/> (s.u.) +/- 0.1 s.u.	DO (mg/L) <input checked="" type="checkbox"/> +/- 10%	ORP (mV) <input checked="" type="checkbox"/> +/- 10 mV	Specific Conductance <input checked="" type="checkbox"/> (mS/cm) +/- 3%	Temp (°C) <input checked="" type="checkbox"/> +/- 3%	Turbidity (NTU) <input checked="" type="checkbox"/> <10 NTU	Depth to water (feet)
0730	0.23	100	6.73	4.02	-11.6	3.196	9.00	45.8	5.33
0735	~.35	100	6.73	2.16	-84.1	3.184	8.04	46.7	6.06
0740	~.5	100	6.70	1.54	-99.4	3.210	7.83	34.5	6.05
0745	~.65	100	6.63	1.27	-97.2	3.266	8.23	11.0	6.12
0750	~.8	100	6.59	1.17	-94.4	3.270	8.36	14.3	6.18
0755	~.95	100	6.57	1.08	-92.2	3.301	8.52	17.3	6.20
0800	~1.1	100	6.54	1.07	-91.4	3.352	8.43	9.3	6.19
0805	~1.25	100	6.52	1.01	-92.6	3.319	8.56	7.8	6.18
0810	2.5	100	6.51	0.97	-91.1	3.310	8.54	7.4	6.20

SAMPLING

Date: **12-6-19** Time: **0812** *** Purge water effervescing in VOC**
 Sample ID: **OMC-MW-606D** Method of Sample Collection: **grab** **(Same as 60)**
 Analytical Parameters: **Alkalinity, Anions, sulfide, dissolved metals, VOCs, MEE, TOC**
 Q.C. Sample Type: **NA** **MS/MSD** Duplicate Duplicate Sample ID:
 Q.C. Parameters: **NA**

Trash picked up? **Y**

Well locked? **Y**

SIGNED/SAMPLER: **[Signature]**

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: MU-6075 Field Crew: TG/KW Purpose of Sampling: OMC Quarterly Sampling
 Site: OMC Field Conditions:

WELL CONDITION

Well Pad	<u>Acceptable</u>	Not Acceptable	Explain:
Protective Casing	<u>Acceptable</u>	Not Acceptable	Explain:
Well Casing	<u>Acceptable</u>	Not Acceptable	Explain:
Locking Cap	<u>Acceptable</u>	Not Acceptable	Explain:
Well Label (outside)	<u>Acceptable</u>	Not Acceptable	Explain:
Well Label (inside)	<u>Acceptable</u>	Not Acceptable	Explain:
J-Plug	<u>Acceptable</u>	Not Acceptable	Explain:

PURGE METHOD

Date: 12/4/19 Time: 1010 Method: low-flow
 Total Well Depth (ft) = 9.84
 Depth to Water (ft) = 3.49
 Water Column (ft) = 6.35 1.0
 Comments: 1 volume

OBSERVATIONS

Odor: None , Low , High , H₂S , Fuel Like , Other:

Comments: Heavy orange precipitate @ Start of Purge

FIELD PARAMETERS

Time	Volume (gal)	Rate (mL/min)	pH <small>✓ (s.u.)</small>	DO (mg/L) <small>± 0.1 s.u.</small>	ORP (mV) <small>± 10 mV</small>	Specific Conductance (mS/cm) <small>± 3%</small>	Temp (°C) <small>± 3%</small>	Turbidity (NTU) <small><10 NTU</small>	Depth to water (feet)
1020	0.5	375	8.14	1.99	-171.8	0.386	5.24	15.5	3.54
1025	1.0	375	8.04	0.48	-185.8	0.383	5.22	1.4	3.54
1030	1.5	375	8.00	0.20	-170.4	0.377	5.13	0.4	3.54
1035	2.0	375	7.97	0.15	-165.9	0.375	5.15	0.8	3.54
1040	2.5	375	7.95	0.11	-170.5	0.373	5.11	3.3	3.54
1045	<u>SAMPLE</u>								

SAMPLING

Date: 12/4/19 Time: 1045
 Sample ID: OMC-MW-6075 Method of Sample Collection: grab

Analytical Parameters: VOC MNA TDS MET

Q.C. Sample Type: N/A MS/MSD Duplicate Duplicate Sample ID: N/A

Q.C. Parameters: N/A

Trash picked up? Y

SIGNED/SAMPLER: [Signature]

Well Isolated? Y

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: MW 607D Field Crew: K. Wilson Purpose of Sampling: OMC Quarterly Sampling
 Site: OMC Field Conditions: 36°F, sunny, windy

WELL CONDITION

Well Pad	<u>Acceptable</u>	Not Acceptable	Explain:
Protective Casing	<u>Acceptable</u>	Not Acceptable	Explain:
Well Casing	<u>Acceptable</u>	Not Acceptable	Explain:
Locking Cap	<u>Acceptable</u>	Not Acceptable	Explain:
Well Label (outside)	<u>Acceptable</u>	<u>Not Acceptable</u>	Explain:
Well Label (inside)	<u>Acceptable</u>	Not Acceptable	Explain:
J-Plug	<u>Acceptable</u>	Not Acceptable	Explain:

PURGE METHOD

Date: 12/4/19 Time: 1005 Method: low-flow
 Total Well Depth (ft) = 27.65
 Depth to Water (ft): = 3.12
 Water Column (ft): = 24.53 4.0
 Comments: 1 volume

OBSERVATIONS

Odor: None Low, High, H₂S, Fuel Like, Other:

Comments: clear

FIELD PARAMETERS

Time	Volume (gal)	Rate (mL/min)	pH (s.u.) +/- 0.1 s.u.	DO (mg/L) +/- 10%	ORP (mV) +/- 10 mV	Specific Conductance (mS/cm) +/- 3%	Temp (°C) +/- 3%	Turbidity (NTU) <10 NTU	Depth to water (feet)
1015	0.2	250	7.38	2.47	57.5	1.423	10.70	4.3	4.50
1020	0.4	150	7.09	1.36	59.5	1.549	9.81	1.1	4.16
1025	0.6	150	7.02	1.15	60.2	1.587	10.14	0.4	4.19
1030	0.8	150	7.00	0.91	52.8	1.784	10.46	0.0	4.20
1035	1.0	150	7.05	0.85	46.1	1.947	10.48	0.0	4.23
1040	1.2	150	7.19	0.80	30.5	1.945	10.33	0.0	4.20
1045	1.4	150	7.31	0.76	17.0	2.014	10.45	0.0	4.20
1050	1.6	150	7.51	0.74	-8.0	2.052	10.43	0.0	4.20
1055	1.8	150	7.68	0.71	-43.8	2.065	10.61	0.0	4.20
1100	2.0	150	7.84	0.69	-83.1	2.085	10.54	0.0	4.20
1105	2.2	150	7.99	0.68	-124.9	2.137	10.55	0.0	4.20
1110	2.4	150	7.93	0.66	-142.4	2.075	10.67	0.0	4.20

SAMPLING

Date: 12-4-19 Time: 1128
 Sample ID: OMC-MW-607D Method of Sample Collection: grab
 Analytical Parameters: Alkalinity/Anions, sulfide, dissolved metals, TOC, MEE, VOC
 Q.C. Sample Type: NA MS/MSD Duplicate Duplicate Sample ID:
 Q.C. Parameters: NA Ferrous Iron = 0.25 mg/L
 Trash picked up? Y Well locked? Y
 SIGNED/SAMPLER: [Signature]

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: MW 607D

Field Crew: J.C. Wilson

Purpose of Sampling:

OMC Quarterly Sampling

Site: OMC

Field Conditions: 37°F, sunny, high winds

WELL CONDITION

Well Pad	Acceptable	Not Acceptable	Explain:
Protective Casing	Acceptable	Not Acceptable	Explain:
Well Casing	Acceptable	Not Acceptable	Explain:
Locking Cap	Acceptable	Not Acceptable	Explain:
Well Label (outside)	Acceptable	Not Acceptable	Explain:
Well Label (inside)	Acceptable	Not Acceptable	Explain:
J-Plug	Acceptable	Not Acceptable	Explain:

See pg 7

PURGE METHOD

Date:	Time:	Method:	low-flow
Total Well Depth (ft)	=		
Depth to Water (ft):	=		
Water Column (ft):	=		

See pg 7

Comments:

1 volume

OBSERVATIONS

Odor: None , Low , High , H₂S , Fuel Like , Other:

Comments:

See pg 7

FIELD PARAMETERS

[illegible]

SAMPLING

Date: 12-4-19

Time: 1128

Sample ID: OML-MW-607D

Method of Sample Collection: grab

Analytical Parameters: *see pg 2*

Q.C. Sample Type: A/A ~~MS/MSD~~ ~~Duplicate~~ ~~Duplicate Sample ID~~

Q.C. Parameters: NA

Trash picked up? Y

Well locked? **Y**

SIGNED/SAMPLER:

2 f2

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: MW-6105 Field Crew: L. SCHARCH Purpose of Sampling: OMC Quarterly Sampling
 Site: OMC Field Conditions: SUNNY 39°F

WELL CONDITION

Well Pad	Acceptable	Not Acceptable	Explain:
Protective Casing	Acceptable	Not Acceptable	Explain:
Well Casing	Acceptable	Not Acceptable	Explain:
Locking Cap	Acceptable	Not Acceptable	Explain: <u>Need w/c</u>
Well Label (outside)	Acceptable	Not Acceptable	Explain:
Well Label (inside)	Acceptable	Not Acceptable	Explain:
J-Plug	Acceptable	Not Acceptable	Explain:

PURGE METHOD

Date: 12/3/2019 Time: 13:40 Method: low-flow
 Total Well Depth (ft) = 10.89
 Depth to Water (ft): = 5.75
 Water Column (ft): = 5.14 0.8
 Comments: 1 volume

OBSERVATIONS

Odor: None, Low, High, H₂S, Fuel Like, Other:
 Comments:

FIELD PARAMETERS

Time	Volume (gal)	Rate (mL/min)	pH (s.u.)	DO (mg/L)	ORP (mV)	Specific Conductance (mS/cm)	Temp (°C)	Turbidity (NTU)	Depth to water (feet)
	--	--	+/- 0.1 s.u.	+/- 10%	+/- 10 mV	+/- 3%	+/- 3%	<10 NTU	--
<u>13:40</u>	<u>13:44</u>	<u>240</u>	<u>7.79</u>	<u>14.65</u>	<u>52.3</u>	<u>0.996</u>	<u>10.107</u>	<u>0.6</u>	<u>5.90</u>
<u>13:45</u>		<u>240</u>	<u>7.74</u>	<u>13.86</u>	<u>50.9</u>	<u>0.995</u>	<u>10.74</u>	<u>0.0</u>	<u>5.80</u>
<u>13:50</u>		<u>240</u>	<u>7.67</u>	<u>13.82</u>	<u>52.3</u>	<u>0.989</u>	<u>10.38</u>	<u>0.0</u>	<u>5.80</u>
<u>13:55</u>		<u>240</u>	<u>7.63</u>	<u>13.70</u>	<u>54.2</u>	<u>0.983</u>	<u>10.49</u>	<u>0.0</u>	<u>5.80</u>
<u>14:00</u>		<u>240</u>	<u>7.61</u>	<u>13.53</u>	<u>55.7</u>	<u>0.983</u>	<u>10.57</u>	<u>0.0</u>	<u>5.80</u>
<u>14:05</u>		<u>240</u>	<u>7.59</u>	<u>13.63</u>	<u>57.7</u>	<u>0.987</u>	<u>10.47</u>	<u>0.0</u>	<u>5.80</u>
<u>14:10</u>	<u>✓</u>	<u>240</u>	<u>7.58</u>	<u>13.57</u>	<u>59.3</u>	<u>0.989</u>	<u>10.54</u>	<u>0.0</u>	<u>5.80</u>
<u>14:15</u>	<u>~3</u>	<u>SAMPLED</u>							

SAMPLING

Date: 12/3/2019 Time: 14:15
 Sample ID: OMC-MW-6105 Method of Sample Collection: grab
 Analytical Parameters: VOC, PCB, Dissolved metals, MNA
 Q.C. Sample Type: N/A MS/MSD Duplicate Duplicate Sample ID: N/A
 Q.C. Parameters: N/A
 Trash picked up? ✓ Well locked? ✓
 SIGNED/SAMPLER: Laci Scharch

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: MW-610D Field Crew: K. Ma Purpose of Sampling: OMC Quarterly Sampling
 Site: OMC Field Conditions: 40 F Windy

WELL CONDITION

Well Pad	<u>Acceptable</u>	Not Acceptable	Explain:
Protective Casing	<u>Acceptable</u>	Not Acceptable	Explain:
Well Casing	<u>Acceptable</u>	Not Acceptable	Explain:
Locking Cap	<u>Acceptable</u>	Not Acceptable	Explain:
Well Label (outside)	<u>Acceptable</u>	<u>Not Acceptable</u>	Explain: <u>no km</u>
Well Label (inside)	<u>Acceptable</u>	Not Acceptable	Explain:
J-Plug	<u>Acceptable</u>	Not Acceptable	Explain:

PURGE METHOD

Date: 12/3/19 Time: 1300 1325 Method: low-flow
 Total Well Depth (ft) = 30.02 km
 Depth to Water (ft): = 5.66
 Water Column (ft): = 24.36 4.0
 Comments: 1 volume

OBSERVATIONS

Odor: None, Low, High, H₂S, Fuel Like, Other:
 Comments:

FIELD PARAMETERS

Time	Volume (gal)	Rate (mL/min)	pH (s.u.) +/- 0.1 s.u.	DO (mg/L) +/- 10%	ORP (mV) +/- 10 mV	Specific Conductance (mS/cm) +/- 3%	Temp (°C) +/- 3%	Turbidity (NTU) <10 NTU	Depth to water (feet)
1330	<u>250</u>	<u>250</u>	<u>7.25</u>	<u>0.61</u>	<u>74.3</u>	<u>1.292</u>	<u>11.73</u>	<u>4.7</u>	<u>5.80</u>
1335		<u>250</u>	<u>7.24</u>	<u>0.58</u>	<u>66.3</u>	<u>1.287</u>	<u>11.73</u>	<u>4.6</u>	<u>5.92</u>
1340		<u>250</u>	<u>7.20</u>	<u>0.43</u>	<u>8.0</u>	<u>1.287</u>	<u>11.63</u>	<u>1.4</u>	<u>5.92</u>
1345		<u>250</u>	<u>7.20</u>	<u>0.34</u>	<u>-23.5</u>	<u>1.276</u>	<u>11.48</u>	<u>1.1</u>	<u>5.92</u>
1350		<u>250</u>	<u>7.20</u>	<u>0.30</u>	<u>-39.9</u>	<u>1.276</u>	<u>11.47</u>	<u>1.5</u>	<u>5.92</u>
1355	<u>N3</u>	<u>250</u>	<u>7.20</u>	<u>0.30</u>	<u>-41.3</u>	<u>1.276</u>	<u>11.43</u>	<u>1.4</u>	<u>5.92</u>
1400	<u>N3</u>	<u>250</u>	<u>7.20</u>	<u>0.30</u>	<u>-43.6</u>	<u>1.275</u>	<u>11.48</u>	<u>1.6</u>	<u>5.92</u>
<u>Sampled @ 1405</u>									

SAMPLING

Date: 12/3/19 Time: 1405
 Sample ID: OMC-MW-610D Method of Sample Collection: grab
 Analytical Parameters: VOC, PCB, Dissolved Metal, MNA
 Q.C. Sample Type: N/A MS/MSD Duplicate Duplicate Sample ID: N/A
 Q.C. Parameters: N/A

Trash picked up? Y Well locked? Y
 SIGNED/SAMPLER: [Signature]

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: MW-6125 Field Crew: JERKIN Purpose of Sampling: OMC Quarterly Sampling
 Site: OMC Field Conditions: 30°F Overcast, Windy

WELL CONDITION

Well Pad	<u>Acceptable</u>	Not Acceptable	Explain:
Protective Casing	<u>Acceptable</u>	Not Acceptable	Explain:
Well Casing	<u>Acceptable</u>	Not Acceptable	Explain:
Locking Cap	<u>Acceptable</u>	Not Acceptable	Explain:
Well Label (outside)	<u>Acceptable</u>	Not Acceptable	Explain:
Well Label (inside)	<u>Acceptable</u>	Not Acceptable	Explain:
J-Plug	<u>Acceptable</u>	Not Acceptable	Explain:

PURGE METHOD

Date: 12/6/19 Time: 0920 Method: low-flow
 Total Well Depth (ft) = 10.78
 Depth to Water (ft): = 3.70
 Water Column (ft): = 7.08 1.15
 Comments: 1 volume

OBSERVATIONS

Odor: None Low, High, H₂S, Fuel Like, Other:
 Comments:

FIELD PARAMETERS

Time	Volume (gal)	Rate (mL/min)	pH (s.u.)	DO (mg/L)	ORP (mV)	Specific Conductance (mS/cm)	Temp (°C)	Turbidity (NTU)	Depth to water (feet)
			+/- 0.1 s.u.	+/- 10%	+/- 10 mV	+/- 3%	+/- 3%	<10 NTU	-
0925	↓	450	7.64	5.01	-67.6	1.107	7.44	16.3	3.73
0930	↓	450	7.26	0.90	-86.7	1.118	7.46	30.4	3.73
0935	↓	450	7.12	0.43	-110.3	1.114	7.44	45.3	3.74
0940	↓	450	7.08	0.22	-110.5	1.104	7.73	20.9	3.73
0945	↓	450	7.07	0.19	-115.5	1.103	7.80	9.2	3.74
0950	↓	450	7.06	0.15	-117.2	1.100	7.77	7.0	3.74
0955	u4	450	7.06	0.13	-115.4	1.100	7.96	2.4	3.74
1000	SAMPLE								

SAMPLING

Date: 12/6/19 Time: 1000
 Sample ID: OMC-MW-6125 Method of Sample Collection: grab
 Analytical Parameters: VOCs, MNA, DSS, Met.
 Q.C. Sample Type: MS/MSD Duplicate Duplicate Sample ID: OMC-MW-6125-2 @ 1005
 Q.C. Parameters: VOCs, MNA, DSS, Met
 Trash picked up? Y Well looked? Y
 SIGNED/SAMPLER: [Signature]

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: MW 612 D Field Crew: K. Wilson Purpose of Sampling: OMC Quarterly Sampling
 Site: OMC Field Conditions: 30°F, windy, cloudy

WELL CONDITION

Well Pad	<u>Acceptable</u>	Not Acceptable	Explain:
Protective Casing	<u>Acceptable</u>	Not Acceptable	Explain:
Well Casing	<u>Acceptable</u>	Not Acceptable	Explain:
Locking Cap	<u>Acceptable</u>	Not Acceptable	Explain:
Well Label (outside)	<u>Acceptable</u>	<u>Not Acceptable</u>	Explain:
Well Label (inside)	<u>Acceptable</u>	Not Acceptable	Explain:
J-Plug	<u>Acceptable</u>	Not Acceptable	Explain:

PURGE METHOD

Date: 12-6-14 Time: 0915 Method: low-flow
 Total Well Depth (ft) = 26.67
 Depth to Water (ft) = 3.34
 Water Column (ft) = 23.33 3-8
 Comments: 1 volume

OBSERVATIONS

Odor: None Low High H₂S Fuel Like Other:

Comments: clear

FIELD PARAMETERS

Time	Volume (gal)	Rate (mL/min)	pH (s.u.) +/- 0.1 s.u.	DO (mg/L) +/- 10%	ORP (mV) +/- 10 mV	Specific Conductance (mS/cm) +/- 3%	Temp (°C) +/- 3%	Turbidity (NTU) <10 NTU	Depth to water (feet)
0925	0.4	300	6.32	4.64	11.6	2708	10.44	25.0	4.50
0930	0.6	250	6.30	2.39	-21.1	2645	10.51	22.3	4.61
0935	0.8	200 ⁵⁰	6.23	1.53	-34.4	2446	10.54	28.1	4.72
0940	1.0	150	6.10	1.18	-40.1	3317	10.69	1.2	4.64
0945	1.2	150	6.06	1.07	-41.3	3361	10.72	1.0	4.68
0950	1.4	150	6.07	0.94	-43.0	3341	10.69	1.3	4.71
0955	1.6	150	6.07	0.93	-45.1	3354	10.90	5.4	4.73
1000	1.8	150	6.06	0.91	-46.8	3376	10.90	0.9	4.75

change
YSI
batter

SAMPLING

Date: 12-6-14 Time: 1001
 Sample ID: OMC-MW-612D Method of Sample Collection: grab
 Analytical Parameters: Alkalinity / Anions, sulfide, dissolved metals, VOCs, TOC, MEE
 Q.C. Sample Type: NA MS/MSD Duplicate Duplicate Sample ID:
 Q.C. Parameters: NA
 Trash picked up? Y Well locked? Y
 SIGNED/SAMPLER: [Signature]

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: MW-613S Field Crew: L. SCHIRCH Purpose of Sampling: OMC Quarterly Sampling
 Site: OMC Field Conditions: CLOUDY 44°F

WELL CONDITION

Well Pad	Acceptable	Not Acceptable	Explain:
Protective Casing	Acceptable	Not Acceptable	Explain:
Well Casing	Acceptable	Not Acceptable	Explain:
Locking Cap	Acceptable	Not Acceptable	Explain:
Well Label (outside)	Acceptable	Not Acceptable	Explain:
Well Label (inside)	Acceptable	Not Acceptable	Explain:
J-Plug	Acceptable	Not Acceptable	Explain:

Muddy around well pad

PURGE METHOD

Date: _____ Time: 14:30 Method: low-flow
 Total Well Depth (ft) = 10.96
 Depth to Water (ft) = 3.72
 Water Column (ft) = 7.24 1.2
 Comments: _____ 1 volume

OBSERVATIONS

Odor: None Low High H/S Fuel Like: _____ Other: _____
 Comments: OK OK

FIELD PARAMETERS

Time	Volume (gal)	Rate (mL/min)	pH (s.u.) +/- 0.1 s.u.	DO (mg/L) +/- 10%	ORP (mV) +/- 10 mV	Specific Conductance (mS/cm) +/- 3%	Temp (°C) +/- 3%	Turbidity (NTU) <10 NTU	Depth to water (feet)
14:33	<u>2.33</u>	<u>210</u>	<u>7.71</u>	<u>6.46</u>	<u>230.8</u>	<u>1.021</u>	<u>8.09</u>	<u>12.6</u>	<u>5.02</u>
14:38	<u>2.33</u>	<u>210</u>	<u>7.69</u>	<u>4.92</u>	<u>232.5</u>	<u>1.019</u>	<u>7.80</u>	<u>5.0</u>	<u>5.02</u>
14:43		<u>200</u>	<u>7.71</u>	<u>4.82</u>	<u>232.8</u>	<u>1.020</u>	<u>7.52</u>	<u>2.1</u>	<u>4.68</u>
14:48		<u>210</u>	<u>7.73</u>	<u>4.93</u>	<u>232.8</u>	<u>1.017</u>	<u>7.48</u>	<u>1.6</u>	<u>4.84</u>
14:53		<u>220</u>	<u>7.78</u>	<u>5.17</u>	<u>232.8</u>	<u>1.011</u>	<u>7.38</u>	<u>0.4</u>	<u>6.22</u>
14:58	<u>N/A</u>	<u>220</u>	<u>7.74</u>	<u>4.91</u>	<u>232.9</u>	<u>1.008</u>	<u>7.58</u>	<u>0.0</u>	<u>5.22</u>
15:03		<u>SAMPLED</u>							

SAMPLING

Date: 12/5/19 Time: 15:03
 Sample ID: OMC-MW-613S Method of Sample Collection: grab
 Analytical Parameters: VOCs, Metals, MNA
 Q.C. Sample Type: N/A MS/MSD Duplicate Duplicate Sample ID: N/A
 Q.C. Parameters: N/A

Trash picked up? Y Well locked? Y
 SIGNED/SAMPLER: Raci Schirch

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: MW-613D Field Crew: KMa Purpose of Sampling: OMC Quarterly Sampling
 Site: OMC Field Conditions: 35 Windy

WELL CONDITION

Well Pad	<u>Acceptable</u>	Not Acceptable	Explain: <u>overgrown vegetation around well</u>
Protective Casing	<u>Acceptable</u>	Not Acceptable	Explain:
Well Casing	<u>Acceptable</u>	Not Acceptable	Explain:
Locking Cap	<u>Acceptable</u>	Not Acceptable	Explain:
Well Label (outside)	<u>Acceptable</u>	Not Acceptable	Explain:
Well Label (inside)	<u>Acceptable</u>	Not Acceptable	Explain:
J-Plug	<u>Acceptable</u>	Not Acceptable	Explain:

PURGE METHOD

Date: 12/5/19 Time: 1430 Method: low-flow
 Total Well Depth (ft) = 25.81
 Depth to Water (ft): = 454.45 (K) 3.48
 Water Column (ft): = 21.36
 Comments: 1 volume

OBSERVATIONS

Odor: None, Low, High H₂S, Fuel Like, Other:

Comments: slightly black w/ suspended black particles, light sheen observed & observed

FIELD PARAMETERS

Time	Volume (gal)	Rate (mL/min)	pH (s.u.) +/- 0.1 s.u.	DO (mg/L) +/- 10%	ORP (mV) +/- 10 mV	Specific Conductance (mS/cm) +/- 3%	Temp (°C) +/- 3%	Turbidity (NTU) <10 NTU	Depth to water (feet)
1435		300	7.18	0.24	-207.0	2.546	11.98	4.9	5.50
1440		250	7.23	0.18	-249.5	2.529	11.81	1.4	5.50
1445		250	7.25	0.16	-258.9	2.510	11.84	1.4	5.50
1450		250	7.27	0.18	-258.5	2.507	11.85	0	5.50
1455		300	7.28	0.16	-261.1	2.506	11.87	0	5.50
1500		300	7.29	0.15	-264.8	2.500	11.90	0	5.50
<u>km</u> 1505	<u>✓</u>	300	7.30	0.14	-268.4	2.494	11.95	0	5.50
1510	<u>NH</u>	300	7.30	0.14	-270.9	2.500	11.95	0	5.50
<u>Sampled @</u>				1515					

SAMPLING

Date: 12/5/19 Time: 1515
 Sample ID: OMC-MW-613D Method of Sample Collection: grab

Analytical Parameters: VOX, PCB, MMA, dissolved metals

Q.C. Sample Type: N/A MS/MSD Duplicate Duplicate Sample ID: N/A

Q.C. Parameters: N/A

Trash picked up? Y Well locked? Y

SIGNED/SAMPLER: ✓

Fe²⁺ = 2.5 mg/L

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: MW-614S Field Crew: L. SCHARCH Purpose of Sampling: OMC Quarterly Sampling
 Site: OMC Field Conditions: SUNNY 27°F

WELL CONDITION

Well Pad	<u>Acceptable</u>	Not Acceptable	Explain:
Protective Casing	<u>Acceptable</u>	Not Acceptable	Explain:
Well Casing	<u>Acceptable</u>	Not Acceptable	Explain:
Locking Cap	<u>Acceptable</u>	Not Acceptable	Explain:
Well Label (outside)	<u>Acceptable</u>	Not Acceptable	Explain:
Well Label (inside)	<u>Acceptable</u>	Not Acceptable	Explain:
J-Plug	<u>Acceptable</u>	Not Acceptable	Explain:

PURGE METHOD

Date: _____ Time: 7:35 Method: low-flow
 Total Well Depth (ft) = 10.02
 Depth to Water (ft): = 3.33
 Water Column (ft): = 7.49 1.2
 Comments: 1 volume

OBSERVATIONS

Odor: None, Low, High, H₂S, Fuel Like, Other:

Comments: CLOUDY BROWN WATER

FIELD PARAMETERS

Time	Volume (gal)	Rate (mL/min)	pH (s.u.) +/- 0.1 s.u.	DO (mg/L) +/- 10%	ORP (mV) +/- 10 mV	Specific Conductance (mS/cm) +/- 3%	Temp (°C) +/- 3%	Turbidity (NTU) <10 NTU	Depth to water (feet)
7:40		240	7.35	2.35	228.1	0.023	7.31	85.5	3.51
7:45		240	7.22	1.70	227.9	0.007	8.35	59.2	3.51
7:50		240	7.22	0.78	227.5	0.780	8.68	24.8	3.51
7:55		240	7.18	0.68	227.1	0.777	8.94	12.4	3.53
8:00		320	7.19	0.35	226.8	0.765	8.96	9.2	3.53
8:05		320	7.17	0.31	226.7	0.758	9.13	9.9	3.53
8:10		320	7.16	0.29	226.6	0.752	9.29	7.7	3.53
8:15		320	7.16	0.28	226.6	0.747	9.46	8.0	3.53
8:20		300	7.17	0.28	226.3	0.742	9.72	5.1	3.53
8:25	✓	300	7.15	0.25	226.0	0.737	9.85	3.6	3.53
8:30	~5	300	7.16	0.24	225.8	0.737	9.64	2.2	3.53
8:35		SAMPLED							

SAMPLING

Date: 12/5/2019 Time: 8:35
 Sample ID: OMC - MW - 614S Method of Sample Collection: grab
 Analytical Parameters: VOCs, Metals, MNA
 Q.C. Sample Type: N/A MS/MSD Duplicate Duplicate Sample ID: N/A
 Q.C. Parameters: N/A

Trash picked up? Y Well locked? Y

SIGNED/SAMPLER:

L. Scharch

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: MW-614D Field Crew: K. Ma Purpose of Sampling: OMC Quarterly Sampling
 Site: OMC Field Conditions: 34 F Sunny

WELL CONDITION

Well Pad	<u>Acceptable</u>	Not Acceptable	Explain:
Protective Casing	<u>Acceptable</u>	Not Acceptable	Explain:
Well Casing	<u>Acceptable</u>	Not Acceptable	Explain:
Locking Cap	<u>Acceptable</u>	Not Acceptable	Explain:
Well Label (outside)	<u>Acceptable</u>	Not <u>Acceptable</u>	Explain: <u>Not labeled</u>
Well Label (inside)	<u>Acceptable</u>	Not Acceptable	Explain:
J-Plug	<u>Acceptable</u>	Not Acceptable	Explain:

PURGE METHOD

Date: 12/4/19 Time: 0735 Method: low-flow
 Total Well Depth (ft) = 29.78
 Depth to Water (ft): = 3.34
 Water Column (ft): = 26.44 4.3
 Comments: 1 volume

OBSERVATIONS

Odor: None, Low, High, H₂S, Fuel Like, Other:
 Comments: slightly yellow, bubbles observed in purge bucket

FIELD PARAMETERS

Time	Volume (gal)	Rate (mL/min)	pH (s.u.) ± 0.1 s.u.	DO (mg/L) ± 10%	ORP (mV) ± 10 mV	Specific Conductance (mS/cm) ± 3%	Temp (°C) ± 3%	Turbidity (NTU) ≤ 10 NTU	Depth to water (feet)
0740		225	7.78	2.15	167.6	4.136	10.21	3.5	8.12
0745		225	7.83	1.85	82.1	4.228	10.87	2.6	10.78
0750		200	7.85	1.74	35.0	4.287	10.73	4.0	10.91
0755		200	7.89	1.59	-19.5	4.375	10.28	3.5	11.62
0800		200	7.94	1.50	-53.1	4.518	10.23	4.5	12.50
0805		200	7.95	1.48	-68.1	4.642	10.80	5.1	12.75
0810		200	8.07	1.18	-115.5	4.776	11.56	9.3	15.93
0815		200	8.09	1.11	-114.0	4.797	11.49	4.7	15.97
0820		200	8.09	1.10	-110.9	4.797	11.45	4.3	16.05
0825	<u>N/A</u>	200	8.09	1.10	-110.3	4.797	11.45	4.6	16.10
<u>Sampled @ 0830</u>									

SAMPLING

Date: 12/4/19 Time: 0830
 Sample ID: OMC-MW-614D Method of Sample Collection: grab
 Analytical Parameters: VOC, dissolved metals, MNA
 Q.C. Sample Type: N/A MS/MSD Duplicate Duplicate Sample ID: N/A
 Q.C. Parameters: N/A
 Trash picked up? 4 Well locked? 4
 SIGNED/SAMPLER: [Signature]

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: MW-6155 Field Crew: I. SCHARCH Purpose of Sampling: OMC Quarterly Sampling
 Site: OMC Field Conditions: PARTLY CLOUDY 42°F

WELL CONDITION

Well Pad	Acceptable	Not Acceptable	Explain:
Protective Casing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Well Casing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Locking Cap	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Well Label (outside)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Well Label (inside)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
J-Plug	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

PURGE METHOD

Date: 12/4/19 Time: 14:20 Method: low-flow
 Total Well Depth (ft) = 11.41
 Depth to Water (ft): = 4.79
 Water Column (ft): = 6.62 1.1
 Comments: 1 volume

OBSERVATIONS

Odor: None, Low, High, H₂S, Fuel Like, Other:

Comments: TURBID, ORANGE/BROWN WATER UNTIL 14:50

ORANGE/BROWN FLOCS IN GROUNDWATER + CLOUDY

FIELD PARAMETERS

Time	Volume (gal)	Rate (mL/min)	pH (s.u.) +/- 0.1 s.u.	DO (mg/L) +/- 10%	ORP (mV) +/- 10 mV	Specific Conductance (mS/cm) +/- 3%	Temp (°C) +/- 3%	Turbidity (NTU) ≤10 NTU	Depth to water (feet)
14:37		400	7.50	1.17	97.2	0.571	9.18	1233	4.89
14:42		200	7.35	0.98	96.3	0.578	9.13	135.5	4.39
14:47		200	7.30	0.84	94.3	0.588	9.24	47.2	4.39
14:52		200	7.26	0.75	93.7	0.586	9.31	34.9	4.89
14:57		200	7.22	0.80	91.5	0.590	9.47	11.2	4.89
15:02		240	7.21	0.66	89.7	0.596	9.08	4.7	4.89
15:07		240	7.20	0.57	87.5	0.594	9.41	6.7	4.89
15:12		240	7.18	0.52	86.0	0.595	9.00	1.8	4.89
15:17		240	7.18	0.47	85.3	0.592	8.99	1.6	4.89
15:22		240	7.18	0.42	84.2	0.592	9.22	0.6	4.89
15:27		240	7.18	0.41	83.7	0.592	9.17	0.3	4.89
15:32	-5 gal	240	7.19	0.39	82.4	0.592	9.15	0.7	4.89
15:37	SAMPLED								

SAMPLING

Date: 12/4/2019 Time: 15:37
 Sample ID: OMC-MW-6155 Method of Sample Collection: grab
 Analytical Parameters: DOC, PC, MNA, dissolved metals
 Q.C. Sample Type: N/A MS/MSD Duplicate Duplicate Sample ID: N/A
 Q.C. Parameters: N/A

Trash picked up? Y Well locked? Y

SIGNED/SAMPLER: I. Scharch

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: MW-615D Field Crew: K Ma Purpose of Sampling: OMC Quarterly Sampling
 Site: OMC Field Conditions: 35°F Windy

WELL CONDITION

Well Pad	Acceptable	Not Acceptable	Explain:
Protective Casing	Acceptable	Not Acceptable	Explain:
Well Casing	Acceptable	Not Acceptable	Explain:
Locking Cap	Acceptable	Not Acceptable	Explain:
Well Label (outside)	Acceptable	Not Acceptable	Explain:
Well Label (inside)	Acceptable	Not Acceptable	Explain:
J-Plug	Acceptable	Not Acceptable	Explain:

pg 1 of 2

PURGE METHOD

Date: 12/4/19 Time: 11:30 Method: low-flow
 Total Well Depth (ft) = 27.41
 Depth to Water (ft): = 4.32
 Water Column (ft): = 23.09 3.8
 Comments: 1 volume

OBSERVATIONS

Odor: None, Low, High, H₂S, Fuel Like, Other:
 Comments: slightly yellow, bubbly water observed in purge bucket

FIELD PARAMETERS

Time	Volume (gal)	Rate (mL/min)	pH (s.u.) ± 0.1 s.u.	DO (mg/L) ± 10%	ORP (mV) ± 10 mV	Specific Conductance (mS/cm) ± 3%	Temp (°C) ± 3%	Turbidity (NTU) ≤ 10 NTU	Depth to water (feet)
1435		300	9.66	2.41	-18.4	2.536	12.04	0	5.73
1440		300	9.55	1.00	-89.0	3.013	12.45	1.5	5.82
1445		300	9.60	1.01	-106.7	3.074	12.33	6.4	5.73
1450		300	9.64	0.97	-132.4	3.111	12.21	3.5	5.73
1455		300	9.66	0.94	-154.4	3.127	12.27	1.8	5.73
1500		300	9.68	0.85	-246.2	3.148	12.25	1.0	5.73
1505		300	9.68	0.84	-280.3	3.163	12.11	8.3	5.73
1510		275	9.68	0.84	-290.8	3.184	11.91	1.3	5.38
1515		275	9.68	0.77	-286.9	3.199	11.55	1.3	5.38
1520		275	9.68	0.77	-230.2	3.200	11.13	2.4	5.38
1525		275	9.67	0.77	-217.0	3.198	10.74	3.4	5.38
1530		275	9.65	0.88	-199.1	3.197	10.63	3.5	5.38

SAMPLING

Date: 12/4/19 Time: 1550
 Sample ID: OMC-MW-615D Method of Sample Collection: grab
 Analytical Parameters: VOC, MNA, Dissolved metals
 Q.C. Sample Type: N/A MS/MSD Duplicate Duplicate Sample ID: N/A
 Q.C. Parameters: N/A

Trash picked up? Y Well locked? Y
 SIGNED/SAMPLER: [Signature]

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: MW-615D Field Crew: K. Ma Purpose of Sampling: OMC Quarterly Sampling
 Site: OMC Field Conditions: 35 F Windy

WELL CONDITION

Well Pad	Acceptable	Not Acceptable	Explain:
Protective Casing	Acceptable	Not Acceptable	Explain:
Well Casing	Acceptable	Not Acceptable	Explain:
Locking Cap	Acceptable	Not Acceptable	Explain:
Well Label (outside)	Acceptable	Not Acceptable	Explain:
Well Label (inside)	Acceptable	Not Acceptable	Explain:
J-Plug	Acceptable	Not Acceptable	Explain:

see pg. 1

pg 2 of 2

PURGE METHOD

Date: _____ Time: _____ Method: low-flow
 Total Well Depth (ft): =
 Depth to Water (ft): =
 Water Column (ft): =

see pg. 1

Comments: _____ 1 volume

OBSERVATIONS

Odor: None , Low , High , H₂S , Fuel Like , Other:

Comments: _____

see pg. 1

FIELD PARAMETERS

Time	Volume (gal)	Rate (mL/min)	pH (s.u.) +/- 0.1 s.u.	DO (mg/L) +/- 10%	ORP (mV) +/- 10 mV	Specific Conductance (mS/cm) +/- 3%	Temp (°C) +/- 3%	Turbidity (NTU) <10 NTU	Depth to water (feet)
1535	↓	275	9.65	0.72	-194.3	3.196	10.53	4.8	5.88
1540	↓	275	9.65	0.72	-194.0	3.193	10.54	8.1	5.38
1545	25.5	275	9.65	0.72	-194.8	3.208	10.55	7.8	5.38
Sampled @ 1550									

SAMPLING

Date: _____ Time: _____
 Sample ID: _____ Method of Sample Collection: grab

Analytical Parameters:

Q.C. Sample Type: MS/MSD Duplicate Duplicate Sample ID: _____

Q.C. Parameters:

Trash picked up? _____ Well locked? _____

SIGNED/SAMPLER: _____

See pg 1

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: MW-6195

Field Crew: TG/KW

Purpose of Sampling:

OMC Quarterly Sampling

Site: OMC

Field Conditions: 35°F Sunny windy

1 of 2

WELL CONDITION

Well Pad	Acceptable	Not Acceptable	Explain:
Protective Casing	Acceptable	Not Acceptable	Explain:
Well Casing	Acceptable	Not Acceptable	Explain:
Locking Cap	Acceptable	Not Acceptable	Explain:
Well Label (outside)	Acceptable	Not Acceptable	Explain:
Well Label (inside)	Acceptable	Not Acceptable	Explain:
J-Plug	Acceptable	Not Acceptable	Explain:

PURGE METHOD

Date: 12/3/19 Time: 1503 Method: low-flow

Total Well Depth (ft) = 10.88

Depth to Water (ft): = 4.06

Water Column (ft): = 6.82

Comments: 1 volume

OBSERVATIONS

Odor: None Low, High, H₂S, Fuel Like, Other:

Comments: Clear

FIELD PARAMETERS

Time	Volume (gal)	Rate (mL/min)	pH (s.u.)	DO (mg/L)	ORP (mV)	Specific Conductance (mS/cm)	Temp (°C)	Turbidity (NTU)	Depth to water (feet)
			+/- 0.1 s.u.	+/- 10%	+/- 10 mV	+/- 3%	+/- 3%	<10 NTU	
1515	0.4	350	8.15	2.70	77.2	0.452	7.39	5.6	4.11
1520	0.9	350	8.10	1.22	73.8	0.444	8.11	3.9	4.15
1525	1.4	350	8.13	0.55	71.0	0.424	8.35	1.5	4.16
1530	1.8	350	8.13	0.37	69.6	0.414	8.40	0.3	4.16
1535	2.3	350	8.10	0.30	58.4	0.389	8.47	0.0	4.15
1540	2.8	750	8.09	0.33	31.3	0.369	8.39	0.0	4.15
1545	3.2	350	8.06	0.21	25.9	0.364	8.46	0.0	4.15
1550	3.6	350	8.05	0.26	10.7	0.366	8.46	0.0	4.15
1555	4.0	350	8.05	0.16	-7.0	0.364	8.41	0.0	4.15
1600	4.5	350	8.04	0.13	-17.0	0.365	8.39	0.0	4.15
1605	5.0	350	8.04	0.13	-25.7	0.365	8.51	0.0	4.15
1610	5.5	350	8.03	0.11	-38.6	0.364	8.56	0.0	4.16

SAMPLING

Date: 12/3/19

Time: 1625

Sample ID: OMC-MW-6195

Method of Sample Collection: grab

Analytical Parameters: VOCs, MNA, Dissinert.

Q.C. Sample Type: N/A MS/MSD

Duplicate

Duplicate Sample ID: N/A

Q.C. Parameters: N/A

Trash picked up?

Well locked?

SIGNED/SAMPLER:

Monitoring Well

20A2

Field Data Sheet - OMC Groundwater Site

Well Number: MW-6195 Field Crew: See pg 1 Purpose of Sampling: OMC Quarterly Sampling
 Site: OMC Field Conditions: See pg 1

WELL CONDITION

	Acceptable	Not Acceptable	Explain:
Well Pad			
Protective Casing			
Well Casing			
Locking Cap			
Well Label (outside)			
Well Label (inside)			
J-Plug			

PURGE METHOD

Date: _____ Time: _____ Method: low-flow
 Total Well Depth (ft): =
 Depth to Water (ft): =
 Water Column (ft): =
 Comments: See pg 1
 1 volume

OBSERVATIONS

Odor: None , Low , High , H₂S , Fuel Like , Other:

Comments: See pg 1

FIELD PARAMETERS

Time	Volume (gal)	Rate (mL/min)	pH (s.u.) +/- 0.1 s.u.	DO (mg/L) +/- 10%	ORP (mV) +/- 10 mV	Specific Conductance (mS/cm) +/- 3%	Temp (°C) +/- 3%	Turbidity (NTU) <10 NTU	Depth to water (feet)
1615	6.0	350	8.03	0.14	-44.1	0.365	8.63	0.0	4.16
1620	6.5	350	8.03	0.12	-47.5	0.365	8.62	0.0	4.16
1625	SAMPLE								

SAMPLING

Date: _____ Time: 1625
 Sample ID: _____ Method of Sample Collection: grab

Analytical Parameters: See pg 1

Q.C. Sample Type: MS/MSD Duplicate Duplicate Sample ID: See pg 1

Q.C. Parameters:

Trash picked up? _____ Well locked? _____

SIGNED/SAMPLER: _____

Monitoring Well

1 of 2

Field Data Sheet - OMC Groundwater Site

Well Number: MW-619D Field Crew: K. Wilson Purpose of Sampling: OMC Quarterly Sampling
 Site: OMC Field Conditions: 37°F, partly sunny, windy

WELL CONDITION

Well Pad	<u>Acceptable</u>	Not Acceptable	Explain:
Protective Casing	<u>Acceptable</u>	Not Acceptable	Explain:
Well Casing	<u>Acceptable</u>	Not Acceptable	Explain:
Locking Cap	<u>Acceptable</u>	Not Acceptable	Explain:
Well Label (outside)	<u>Acceptable</u>	<u>Not Acceptable</u>	Explain:
Well Label (inside)	<u>Acceptable</u>	Not Acceptable	Explain:
J-Plug	<u>Acceptable</u>	Not Acceptable	Explain:

PURGE METHOD

Date: 12-3-19 Time: 1500 Method: low-flow
 Total Well Depth (ft) = 29.60
 Depth to Water (ft): = 4.16
 Water Column (ft): = 25.44 4.1
 Comments: 1 volume

OBSERVATIONS

Odor: None, Low, High, H₂S, Fuel Like, Other:

Comments: clear, overall water tinted light orange

FIELD PARAMETERS

Time	Volume (gal)	Rate (mL/min)	pH (s.u.) +/- 0.1 s.u.	DO (mg/L) +/- 10%	ORP (mV) +/- 10 mV	Specific Conductance (mS/cm) +/- 3%	Temp (°C) +/- 3%	Turbidity (NTU) <10 NTU	Depth to water (feet)
1505	~0.4	300	8.22	1.17	3.3	1.488	10.88	0.0	4.55
1510	0.8	300	8.34	0.98	-27.6	1.648	10.95	0.0	4.59
1515	~1 gal	300	8.50	0.85	-65.1	1.765	11.07	0.0	4.58
1520	~1.2	300	8.63	0.70	-91.2	1.814	11.28	0.0	4.61
1525	~1.5 gal	300	8.72	0.47	-146.6	1.848	11.40	0.0	4.64
1530	~1.9 gal	300	8.75	0.40	-175.0	1.848	11.45	0.0	4.68
1535	1.3 gal	300	8.80	0.34	-193.1	1.873	11.39	0.0	4.66
1540	1.7 gal	300	8.80	0.29	-207.4	1.871	11.34	0.0	4.67
1545	2.1 gal	300	8.82	0.28	-214.7	1.874	11.40	0.0	4.67
1550	2.5 gal	300	8.82	0.26	-220.7	1.871	11.42	0.0	4.68
1555	2.9 gal	300	8.83	0.25	-226.8	1.868	11.44	0.0	4.70
1600	3.3 gal	300	8.84	0.24	-232.4	1.882	11.36	0.0	4.73

SAMPLING

Date: 12-3-19 Time: 1610
 Sample ID: OMC-MW-619D Method of Sample Collection: grab

Analytical Parameters: Alkalinity / Anion, TOC, Sulfide, MEE, VOCs, dissolved metals

Q.C. Sample Type: NA MS/MSD Duplicate Duplicate Sample ID: NA

Q.C. Parameters: NA

Trash picked up? Y Well locked? Y

SIGNED/SAMPLER: [Signature]

1 of 2

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: MW-6141D

Field Crew: K. Wilson

Purpose of Sampling

OMC Quarterly Sampling

Site: OMC

Field Conditions: 30°F, cloudy windy

WELL CONDITION

Well Pad	Acceptable	Not Acceptable	Explain:
Protective Casing	Acceptable	Not Acceptable	Explain:
Well Casing	Acceptable	Not Acceptable	Explain:
Locking Cap	Acceptable	Not Acceptable	Explain:
Well Label (outside)	Acceptable	Not Acceptable	Explain:
Well Label (inside)	Acceptable	Not Acceptable	Explain:
J-Plug	Acceptable	Not Acceptable	Explain:

See pg 1

PURGE METHOD

Date: Time: Method: low-flow

Total Well Depth (ft) =

Depth to Water (ft). =

Water Column (ft): =

Comments:

1 volume

OBSERVATIONS

Odor: None , Low , High , H₂S , Fuel Like , Other:

Comments:

See pg 1

FIELD PARAMETERS

[illegible]

SAMPLING

Date: 12-3-19

Time: ~~1440~~ 1610

Sample ID: OML-MW-6191D

Method of Sample Collection: grab

Analytical Parameters:

see pg 7

Q.C. Sample Type: *N/A*

MSMSB

~~Duplicate~~

Duplicate Sample ID:

Q.C. Parameters: *NA*

Trash picked up?

Well locked? ☒

SIGNED/SAMPLER:

[Signature]

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: MW-6205 Field Crew: K. Wilson Purpose of Sampling: OMC Quarterly Sampling
 Site: OMC Field Conditions: 30°F, sunny, windy

WELL CONDITION

Well Pad	<u>Acceptable</u>	Not Acceptable	Explain:
Protective Casing	<u>Acceptable</u>	Not Acceptable	Explain:
Well Casing	<u>Acceptable</u>	Not Acceptable	Explain:
Locking Cap	<u>Acceptable</u>	<u>Not Acceptable</u>	Explain: <u>Needs larger size lock</u>
Well Label (outside)	<u>Acceptable</u>	<u>Not Acceptable</u>	Explain:
Well Label (inside)	<u>Acceptable</u>	Not Acceptable	Explain:
J-Plug	<u>Acceptable</u>	Not Acceptable	Explain:

PURGE METHOD

Date: 12-4-14 Time: 0730 Method: low-flow
 Total Well Depth (ft) = 11.02
 Depth to Water (ft): = 4.53
 Water Column (ft): = 6.49 1.1
 Comments: 1 volume

OBSERVATIONS

Odor: None, Low, High, H₂S, Fuel Like, Other: Slight Sulfur
 Comments: Small black flecks in water

FIELD PARAMETERS

Time	Volume (gal)	Rate (mL/min)	pH (s.u.) +/- 0.1 s.u.	DO (mg/L) +/- 10%	ORP (mV) +/- 10 mV	Specific Conductance (mS/cm) +/- 3%	Temp (°C) +/- 3%	Turbidity (NTU) <10 NTU	Depth to water (feet)
0740	0.4	300	6.64	3.42	70.5	1.098	8.63	6.3	4.82
0745	0.8	300	6.67	1.44	-16.9	1.081	8.57	8.2	4.75
0750	1.2	300	6.69	1.15	-37.9	1.082	8.70	21.9	4.76
0755	1.6	300	6.71	1.02	-50.3	1.076	8.67	1.6	4.76
0800	<u>1.82</u>	300	6.71	0.94	-60.9	1.077	8.66	2.8	4.78
0805	<u>2.4</u>	300	6.72	0.85	-68.2	1.071	8.86	0.0	4.78
0810	<u>2.8</u>	300	6.73	0.83	-68.3	1.090	9.00	0.0	4.80
0815	3.2	300	6.73	0.80	-70.9	1.067	9.03	0.0	4.81

SAMPLING

Date: 12-4-14 Time: 0815
 Sample ID: OMC-MW-6205 Method of Sample Collection: grab
 Analytical Parameters: Alkalinity/Anions, TOC, MEE, VOCs, dissolved metals, sulfide
 Q.C. Sample Type: NA MS/MSD Duplicate Duplicate Sample ID:
 Q.C. Parameters: NA
 Trash picked up? X Well locked? No lock
 SIGNED/SAMPLER: [Signature]

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: MW-6200 Field Crew: JG/KW Purpose of Sampling: OMC Quarterly Sampling
 Site: OMC Field Conditions: 90°F Sunny Windy

WELL CONDITION

Well Pad	<u>Acceptable</u>	Not Acceptable	Explain:
Protective Casing	<u>Acceptable</u>	Not Acceptable	Explain:
Well Casing	<u>Acceptable</u>	Not Acceptable	Explain:
Locking Cap	<u>Acceptable</u>	<u>Not Acceptable</u>	Explain: <u>Need bigger lock</u>
Well Label (outside)	<u>Acceptable</u>	Not Acceptable	Explain:
Well Label (inside)	<u>Acceptable</u>	Not Acceptable	Explain:
J-Plug	<u>Acceptable</u>	Not Acceptable	Explain:

PURGE METHOD

Date: 12/4/14 Time: 0733 Method: low-flow
 Total Well Depth (ft): = 30.71
 Depth to Water (ft): = 3.78
 Water Column (ft): = 26.93 4.4
 Comments: 1 volume

OBSERVATIONS

Odor: None, Low, High, Fuel Like, Other:

Comments: Gray cloudy water, water is bubbly coming from well

FIELD PARAMETERS

Time	Volume (gal)	Rate (mL/min)	pH (s.u.)	DO (mg/L)	ORP (mV)	Specific Conductance (mS/cm)	Temp (°C)	Turbidity (NTU)	Depth to water (feet)
			±0.1 s.u.	±10%	±10 mV	±3%	±3%	<10 NTU	--
0740	0.2	250	7.41	2.20	-244.7	2.132	10.14	126.3	5.49
0745	0.5	250	7.57	0.57	-327.8	2.252	11.04	82.6	5.61
0750	0.7	250	7.61	0.26	-335.8	2.305	11.40	67.8	5.61
0755	1.0	250	7.67	0.13	-337.2	2.333	11.60	32.7	5.65
0800	1.2	250	7.70	0.10	-338.1	2.349	11.74	24.4	5.69
0805	1.5	200	7.70	0.07	-354.4	2.373	11.47	34.5	5.66
0810	1.7	200	7.71	0.07	-355.2	2.376	11.84	33.8	5.67
0815	1.9	200	7.76	0.06	-349.3	2.383	12.05	34.6	5.69
0820	<u>SAMPLE</u>								

SAMPLING

Date: 12/4/14 Time: 0820
 Sample ID: OMC-MW-620P Method of Sample Collection: grab
 Analytical Parameters: VOCs, MNA, Diss Met
 Q.C. Sample Type: N/A MS/MSD Duplicate Duplicate Sample ID: N/A
 Q.C. Parameters: N/A

Trash picked up? ✓ Well locked? ✓
 SIGNED/SAMPLER: [Signature]

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: MW-6215 Field Crew: C. Rous Purpose of Sampling: OMC Quarterly Sampling
 Site: OMC Field Conditions: 30°F sunny, light wind

WELL CONDITION

Well Pad	<u>Acceptable</u>	Not Acceptable	Explain:
Protective Casing	<u>Acceptable</u>	Not Acceptable	Explain:
Well Casing	<u>Acceptable</u>	Not Acceptable	Explain:
Locking Cap	<u>Acceptable</u>	Not Acceptable	Explain:
Well Label (outside)	Acceptable	<u>Not Acceptable</u>	Explain:
Well Label (inside)	<u>Acceptable</u>	Not Acceptable	Explain:
J-Plug	<u>Acceptable</u>	Not Acceptable	Explain:

not labeled on outside

PURGE METHOD

Date: 12/6/19 Time: 0750 Method: low-flow
 Total Well Depth (ft) = 10.89
 Depth to Water (ft): = 4.80
 Water Column (ft): = 6.09 1-0
 Comments: 1 volume

OBSERVATIONS

Odor: None, Low, High, H₂S, Fuel Like, Other:
 Comments:

FIELD PARAMETERS

Time	Volume (gal)	Rate (mL/min)	pH (s.u.) +/- 0.1 s.u.	DO (mg/L) +/- 10%	ORP (mV) +/- 10 mV	Specific Conductance (mS/cm) +/- 3%	Temp (°C) +/- 3%	Turbidity (NTU) <10 NTU	Depth to water (feet)
0755	—	380							
0755	—	350	7.16	0.94	191.3	1.617	8.23	5.7	6.16
0800	—	350	7.24	0.54	189.1	1.615	8.40	0.5	6.14
0805	—	350	7.27	0.47	187.2	1.590	8.44	0.0	6.14
0810	—	350	7.33	0.35	184.4	1.580	8.55	0.0	6.14
0815	—	350	7.34	0.30	182.5	1.565	8.59	0.0	6.14
0820	—	350	7.35	0.31	180.6	1.571	8.62	0.0	6.14

SAMPLING

Date: 12/6/19 Time: 0830 / 840 (FD)
 Sample ID: OMC-MW-6215 Method of Sample Collection: grab
 Analytical Parameters: sulfide, TOC, MEE, NO₃, Alk, Anions, metals
 Q.C. Sample Type: MS/MSD Duplicate Duplicate Sample ID: 0840 OMC-MW-6215-R
 Q.C. Parameters:

Trash picked up? Y Well locked? Y
 SIGNED/SAMPLER: [Signature]

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: MW-621D Field Crew: K Ma Purpose of Sampling: OMC Quarterly Sampling
 Site: OMC Field Conditions: 30 F Sunny

WELL CONDITION

Well Pad	<u>Acceptable</u>	Not Acceptable	Explain:
Protective Casing	<u>Acceptable</u>	Not Acceptable	Explain:
Well Casing	<u>Acceptable</u>	Not Acceptable	Explain:
Locking Cap	<u>Acceptable</u>	Not Acceptable	Explain:
Well Label (outside)	<u>Acceptable</u>	<u>Not Acceptable</u>	Explain: <u>No label</u>
Well Label (inside)	<u>Acceptable</u>	Not Acceptable	Explain:
J-Plug	<u>Acceptable</u>	Not Acceptable	Explain:

PURGE METHOD

Date: _____ Time: 0750 Method: low-flow
 Total Well Depth (ft) = 20.74
 Depth to Water (ft): = 4.91
 Water Column (ft): = 24.83 4.0
 Comments: _____ 1 volume

OBSERVATIONS

Odor: None , Low , High , H₂S , Fuel Like , Other:

Comments: slightly yellow

FIELD PARAMETERS

Time	Volume (gal)	Rate (mL/min)	pH (s.u.) +/- 0.1 s.u.	DO (mg/L) +/- 10%	ORP (mV) +/- 10 mV	Specific Conductance (mS/cm) +/- 3%	Temp (°C) +/- 3%	Turbidity (NTU) <10 NTU	Depth to water (feet)
0755		250	6.66	1.46	220.1	2.971	9.38	13.3	6.40
0800		250	6.70	1.06	217.3	2.948	9.54	12.1	6.61
0805		250	6.66	0.85	208.6	3.127	11.32	6.5	7.89
0810		250	6.66	0.74	207.4	3.130	11.50	5.7	7.90
0815		250	6.65	0.79	206.0	3.146	11.62	3.4	8.10
0820		250	6.65	1.45	204.6	3.146	11.62	2.9	8.10
0825		250	6.65	1.43	204.1	3.143	11.75	1.9	8.10
0830	<u>~4</u>	250	6.65	1.42	204.1	3.143	11.75	2.1	8.10
<u>Sampled @ 0835</u>									

SAMPLING

Date: 12/6/19 Time: 0835
 Sample ID: OMC-MW-621D Method of Sample Collection: grab

Analytical Parameters: VOC, Dissolved metals, MNA

Q.C. Sample Type: N/A MS/MSD Duplicate Duplicate Sample ID: N/A

Q.C. Parameters: N/A

Trash picked up? Y Well locked? Y

SIGNED/SAMPLER: [Signature]

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: **MW-6235**

Field Crew: **SG/KW**

Purpose of Sampling:

OMC Quarterly Sampling

Site: **OMC**

Field Conditions: **30°F Overcast Windy**

WELL CONDITION

Well Pad	<u>Acceptable</u>	Not Acceptable	Explain:
Protective Casing	<u>Acceptable</u>	Not Acceptable	Explain:
Well Casing	<u>Acceptable</u>	Not Acceptable	Explain:
Locking Cap	<u>Acceptable</u>	Not Acceptable	Explain:
Well Label (outside)	<u>Acceptable</u>	Not Acceptable	Explain:
Well Label (inside)	<u>Acceptable</u>	Not Acceptable	Explain:
J-Plug	<u>Acceptable</u>	Not Acceptable	Explain:

PURGE METHOD

Date: **12/3/19** Time: **0950** Method: **low-flow**

Total Well Depth (ft) = **10.66**

Depth to Water (ft): = **2.71**

Water Column (ft): = **7.95** **1.3**

Comments: **1 volume**

OBSERVATIONS

Odor: None Low, High, H₂S, Fuel Like, Other:

Comments: **Orange tint to H₂O**

FIELD PARAMETERS

Time	Volume (gal)	Rate (mL/min)	pH (s.u.) ± 0.1 s.u.	DO (mg/L) ± 10%	ORP (mV) ± 10 mV	Specific Conductance (mS/cm) ± 3%	Temp (°C) ± 3%	Turbidity (NTU) ≤ 10 NTU	Depth to water (feet)
0955	0.4	300	7.62	1.48	-73.6	0.517	8.70	1260	2.84
1000	0.8	300	7.54	0.56	-105.2	0.523	9.09	32.3	2.85
1005	1.2	300	7.51	0.28	-120.2	0.525	9.17	13.8	2.85
1010	1.6	300	7.50	0.22	-129.3	0.522	9.21	6.0	2.85
1015	2.0	300	7.50	0.17	-135.6	0.520	9.26	2.3	2.84
1020	2.4	300	7.50	0.15	-138.5	0.520	9.27	1.4	2.83
1025	SAMPLE								

SAMPLING

Date: **12/3/19** Time: **SAMPLE @ 1025**

Sample ID: **OMC-MW-6235** Method of Sample Collection: **grab**

Analytical Parameters: **VOCS, MNA, Diss. Met, PCDS**

Q.C. Sample Type: **NA** MS/MSD Duplicate Duplicate Sample ID: **NA**

Q.C. Parameters: **NA**

Trash picked up? **Y** Well locked? **Y**

SIGNED/SAMPLER: 

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: MW-6230 Field Crew: K. Wilson Purpose of Sampling: OMC Quarterly Sampling
 Site: OMC Field Conditions: 32°F, cloudy, windy

WELL CONDITION

Well Pad	<u>Acceptable</u>	Not Acceptable	Explain:
Protective Casing	<u>Acceptable</u>	Not Acceptable	Explain:
Well Casing	<u>Acceptable</u>	Not Acceptable	Explain:
Locking Cap	<u>Acceptable</u>	Not Acceptable	Explain:
Well Label (outside)	Acceptable	<u>Not Acceptable</u>	Explain: <u>None</u>
Well Label (inside)	<u>Acceptable</u>	Not Acceptable	Explain:
J-Plug	<u>Acceptable</u>	Not Acceptable	Explain:

PURGE METHOD

Date: 12/3/19 Time: 0950 Method: low-flow
 Total Well Depth (ft) = 34.78
 Depth to Water (ft): = 2.41
 Water Column (ft): = 31.87 5.2
 Comments: 1 volume

OBSERVATIONS

Odor: None, Low, High, H₂S, Fuel Like, Other:
 Comments: clear

FIELD PARAMETERS

Time	Volume (gal)	Rate (mL/min)	pH (s.u.)	DO (mg/L)	ORP (mV)	Specific Conductance (mS/cm)	Temp (°C)	Turbidity (NTU)	Depth to water (feet)
			+/- 0.1 s.u.	+/- 10%	+/- 10 mV	+/- 3%	+/- 3%	<10 NTU	--
0955	<u>~0.2</u>	<u>200</u>	<u>7.86</u>	<u>4.79</u>	<u>56.9</u>	<u>0.498</u>	<u>10.04</u>	<u>0.0</u>	<u>3.82</u>
1000	<u>0.4</u>	<u>200</u>	<u>7.80</u>	<u>3.18</u>	<u>36.1</u>	<u>0.520</u>	<u>9.27</u>	<u>0.0</u>	<u>3.60</u>
1005	<u>0.67</u>	<u>250</u>	<u>7.72</u>	<u>1.25</u>	<u>-106.8</u>	<u>0.535</u>	<u>9.72</u>	<u>0.0</u>	<u>3.66</u>
1010	<u>1 gal</u>	<u>250</u>	<u>7.71</u>	<u>0.86</u>	<u>-132.4</u>	<u>0.538</u>	<u>9.77</u>	<u>0.0</u>	<u>3.63</u>
1015	<u>~1.2 gal</u>	<u>250</u>	<u>7.72</u>	<u>0.71</u>	<u>-139.0</u>	<u>0.538</u>	<u>9.51</u>	<u>0.0</u>	<u>2.98</u>
	<u>Pumped stopped working - replaced with new pump</u>								
1045	<u>1.4 gal</u>	<u>300</u>	<u>7.68</u>	<u>1.09</u>	<u>-129.3</u>	<u>0.548</u>	<u>10.65</u>	<u>0.0</u>	<u>3.90</u>
1050	<u>1.5 gal</u>	<u>150</u>	<u>7.66</u>	<u>0.31</u>	<u>-149.3</u>	<u>0.546</u>	<u>10.37</u>	<u>0.0</u>	<u>3.75</u>
1055	<u>1.7 gal</u>	<u>200</u>	<u>7.65</u>	<u>0.29</u>	<u>-150.5</u>	<u>0.585</u>	<u>10.61</u>	<u>0.0</u>	<u>3.80</u>
1100	<u>1.9 gal</u>	<u>200</u>	<u>7.65</u>	<u>0.28</u>	<u>-151.7</u>	<u>0.581</u>	<u>10.45</u>	<u>0.0</u>	<u>3.81</u>

SAMPLING

Date: 12-3-19 Time: 1106
 Sample ID: OMC-MW-6230 Method of Sample Collection: grab
 Analytical Parameters: Alkalinity, Anions, dissolved metals, sulfide, TOC, MEE, VOCs, PCBs
 Q.C. Sample Type: NA MS/MSD Duplicate Duplicate Sample ID: NA
 Q.C. Parameters: NA
 Trash picked up? Y Well locked? Y
 SIGNED/SAMPLER: [Signature]

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: MW-6245 Field Crew: J. Graham Purpose of Sampling: OMC Quarterly Sampling
Site: OMC Field Conditions:

WELL CONDITION

Well Pad	<u>Acceptable</u>	Not Acceptable	Explain:
Protective Casing	<u>Acceptable</u>	Not Acceptable	Explain:
Well Casing	<u>Acceptable</u>	Not Acceptable	Explain:
Locking Cap	<u>Acceptable</u>	Not Acceptable	Explain:
Well Label (outside)	<u>Acceptable</u>	<u>Not Acceptable</u>	Explain: <u>None</u>
Well Label (inside)	<u>Acceptable</u>	Not Acceptable	Explain:
J-Plug	<u>Acceptable</u>	Not Acceptable	Explain:

PURGE METHOD

Date: Time: 1324 Method: low-flow
Total Well Depth (ft) = 10.86
Depth to Water (ft) = 4.73
Water Column (ft) = 6.13 1.0
Comments: 1 volume

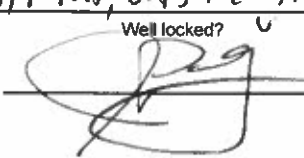
OBSERVATIONS

Odor: None Low, High, H₂S, Fuel Like, Other:
Comments: Clear

FIELD PARAMETERS

Time	Volume (gal)	Rate (mL/min)	pH (s.u.) +/- 0.1 s.u.	DO (mg/L) +/- 10%	ORP (mV) +/- 10 mV	Specific Conductance (mS/cm) +/- 3%	Temp (°C) +/- 3%	Turbidity (NTU) <10 NTU	Depth to water (feet)
1335	<u>0.96</u>	<u>350</u>	<u>7.87</u>	<u>2.04</u>	<u>77.9</u>	<u>0.521</u>	<u>9.92</u>	<u>0.7</u>	<u>4.79</u>
1340	<u>1.0</u>	<u>350</u>	<u>7.71</u>	<u>1.61</u>	<u>80.3</u>	<u>0.547</u>	<u>10.00</u>	<u>0.0</u>	<u>4.79</u>
1345	<u>1.4</u>	<u>350</u>	<u>7.63</u>	<u>0.59</u>	<u>76.8</u>	<u>0.567</u>	<u>10.04</u>	<u>0.0</u>	<u>4.79</u>
1350	<u>1.9</u>	<u>350</u>	<u>7.59</u>	<u>0.49</u>	<u>75.9</u>	<u>0.575</u>	<u>10.05</u>	<u>0.0</u>	<u>4.79</u>
1355	<u>2.4</u>	<u>350</u>	<u>7.56</u>	<u>0.37</u>	<u>74.0</u>	<u>0.575</u>	<u>10.01</u>	<u>0.0</u>	<u>4.79</u>
1400	<u>2.8</u>	<u>350</u>	<u>7.54</u>	<u>0.32</u>	<u>73.9</u>	<u>0.582</u>	<u>9.97</u>	<u>0.0</u>	<u>4.79</u>
1405	<u>3.3</u>	<u>350</u>	<u>7.52</u>	<u>0.41</u>	<u>72.2</u>	<u>0.586</u>	<u>9.99</u>	<u>0.0</u>	<u>4.79</u>
1410	<u>SAMPLE</u>								
1415	<u>FDSAMPLE</u>								

SAMPLING

Date: 12/3/19 Time: 1410 + 1415
Sample ID: OMC-MW-6245 Method of Sample Collection: grab
Analytical Parameters: VOCS, MNA, DISS Met, PCB
Q.C. Sample Type: MS/MSD Duplicate Duplicate Sample ID: OMC-MW-6245-R
Q.C. Parameters: VOCS, MNA, DISS Met, PCB
Trash picked up? Y Well locked? Y
SIGNED/SAMPLER: 

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: MW 624 D Field Crew: K. Wilson Purpose of Sampling: OMC Quarterly Sampling
 Site: OMC Field Conditions: 37°F, partly sunny

WELL CONDITION

Well Pad	<u>Acceptable</u>	Not Acceptable	Explain:
Protective Casing	<u>Acceptable</u>	Not Acceptable	Explain:
Well Casing	<u>Acceptable</u>	Not Acceptable	Explain:
Locking Cap	<u>Acceptable</u>	Not Acceptable	Explain:
Well Label (outside)	<u>Acceptable</u>	<u>Not Acceptable</u>	Explain:
Well Label (inside)	<u>Acceptable</u>	Not Acceptable	Explain:
J-Plug	<u>Acceptable</u>	Not Acceptable	Explain:

PURGE METHOD

Date: 12-3-19 Time: 1320 Method: low-flow
 Total Well Depth (ft) = 36.70
 Depth to Water (ft): = 480
 Water Column (ft): = 36.9 5.2
 Comments: 1 volume

OBSERVATIONS

Odor: None, Low, High, H₂S, Fuel Like, Other:

Comments: clear

FIELD PARAMETERS

Time	Volume (gal)	Rate (mL/min)	pH (s.u.) +/- 0.1 s.u.	DO (mg/L) +/- 10%	ORP (mV) +/- 10 mV	Specific Conductance (mS/cm) +/- 3%	Temp (°C) +/- 3%	Turbidity (NTU) <10 NTU	Depth to water (feet)
1335	↓	350	7.75	1.38	-74.8	1.804	11.72	6.3	5.46
1340	↓	350	7.70	0.64	-125.9	1.853	11.80	0.0	5.48
1345	↓	350	7.69	0.43	-135.0	1.864	11.84	0.0	5.52
1350	↓	350	7.70	0.36	-138.6	1.869	11.82	0.0	5.53
1355	23	350	7.69	0.32	-140.0	1.873	11.80	0.0	5.53

SAMPLING

Date: 12-3-19 Time: 1400
 Sample ID: OMC-MW-624D Method of Sample Collection: grab
 Analytical Parameters: Alkalinity/Anions, TOC, Sulfide, dissolved metals, VOCs, MEE, PCBs
 Q.C. Sample Type: NA MS/MSB Duplicate Duplicate Sample ID:
 Q.C. Parameters: NA
 Trash picked up? Y Well locked? Y
 SIGNED/SAMPLER: [Signature]

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: MJ-6255 Field Crew: TB/KW Purpose of Sampling: OMC Quarterly Sampling
 Site: OMC Field Conditions:

WELL CONDITION

Well Pad	<u>Acceptable</u>	Not Acceptable	Explain:
Protective Casing	<u>Acceptable</u>	Not Acceptable	Explain:
Well Casing	<u>Acceptable</u>	Not Acceptable	Explain:
Locking Cap	<u>Acceptable</u>	<u>Not Acceptable</u>	Explain: <u>Need bigger lock</u>
Well Label (outside)	<u>Acceptable</u>	Not Acceptable	Explain:
Well Label (inside)	<u>Acceptable</u>	Not Acceptable	Explain:
J-Plug	<u>Acceptable</u>	Not Acceptable	Explain:

PURGE METHOD

Date: Time: 1035 Method: low-flow
 Total Well Depth (ft) = 11.67
 Depth to Water (ft): = 2.95
 Water Column (ft): = 8.52 1.4
 Comments: 1 volume

OBSERVATIONS

Odor: None, Low, High, H₂S, Fuel Like, Other:
 Comments:

FIELD PARAMETERS

Time	Volume (gal)	Rate (mL/min)	pH (s.u.) +/- 0.1 s.u.	DO (mg/L) +/- 10%	ORP (mV) +/- 10 mV	Specific Conductance (mS/cm) +/- 3%	Temp (°C) +/- 3%	Turbidity (NTU) <10 NTU	Depth to water (feet)
1045	2.6	450	8.20	4.07	-41.2	0.541	8.99	1824	3.01
1050	1.2	450	8.00	0.84	-91.9	0.533	8.84	713	3.01
1055	1.8	450	7.86	0.48	-124.3	0.534	8.71	340	3.02
1100	2.4	450	7.82	0.31	-130.6	0.535	8.72	19.0	3.02
1105	3.0	450	7.79	0.24	-136.0	0.535	8.81	9.7	3.02
1110	3.5	400	7.76	0.20	-141.3	0.538	8.82	8.7	3.00
1115	4.0	450	7.75	0.19	-143.2	0.538	8.83	7.2	3.00
1120	SAMPLE								

SAMPLING

Date: 12/5/19 Time: 1120
 Sample ID: OMC-MW-6255 Method of Sample Collection: grab
 Analytical Parameters: VOCs, MNA, Diss Met
 Q.C. Sample Type: N/A MS/MSD Duplicate Duplicate Sample ID: N/A
 Q.C. Parameters: N/A

Trash picked up? ✓ Well locked? ✓
 SIGNED/SAMPLER: [Signature]

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: MW 625D Field Crew: Ruth Wilson Purpose of Sampling: OMC Quarterly Sampling
 Site: OMC Field Conditions: 35°F, cloudy, low winds

WELL CONDITION

Well Pad	<u>Acceptable</u>	Not Acceptable	Explain:
Protective Casing	<u>Acceptable</u>	Not Acceptable	Explain:
Well Casing	<u>Acceptable</u>	Not Acceptable	Explain:
Locking Cap	<u>Acceptable</u>	<u>Not Acceptable</u>	Explain: <u>Needs large lock</u>
Well Label (outside)	<u>Acceptable</u>	<u>Not Acceptable</u>	Explain:
Well Label (inside)	<u>Acceptable</u>	Not Acceptable	Explain:
J-Plug	<u>Acceptable</u>	Not Acceptable	Explain:

PURGE METHOD

Date: 12-5-19 Time: 1035 Method: low-flow
 Total Well Depth (ft): 30.07
 Depth to Water (ft): 3.56
 Water Column (ft): 26.51 4.3
 Comments: 1 volume

OBSERVATIONS

Odor: None, Low, High, H₂S, Fuel Like, Other:
 Comments: yellow-brown color

FIELD PARAMETERS

Time	Volume (gal)	Rate (mL/min)	pH (s.u.) ± 0.1 s.u.	DO (mg/L) ± 10%	ORP (mV) ± 10 mV	Specific Conductance (mS/cm) ± 3%	Temp (°C) ± 3%	Turbidity (NTU) <10 NTU	Depth to water (feet)
1045	0.5	400	7.84	1.45	-11.9	2.357	11.73	15.7	4.02
1050	1.0	400	8.27	1.30	-51.4	2.412	11.82	16.4	4.04
1055	1.5	400	8.54	0.98	-86.1	2.525	11.69	16.1	4.02
1100	2.0	400	8.60	0.87	-94.1	2.532	11.68	14.0	4.02
1105	2.5	400	8.57	0.82	-94.9	2.762 2.703	11.69	8.9	4.02
1110	3.0	400	8.62	0.78	-98.3	2.526	11.60	8.3	4.01
1115	3.5	400	8.62	0.76	-97.6	2.529	11.67	9.1	4.01

SAMPLING

Date: 12-5-19 Time: 1116
 Sample ID: OMC-MW-625D Method of Sample Collection: grab
 Analytical Parameters: Alkalinity/Anions, sulfide, dissolved metals, TOC, MEE, VOC,
 Q.C. Sample Type: NA MS/MSD Duplicate Duplicate Sample ID:
 Q.C. Parameters: NA
 Trash picked up? Y Well locked? No lock
 SIGNED/SAMPLER: [Signature]

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: MW-6265 Field Crew: K. Wilson Purpose of Sampling: OMC Quarterly Sampling
 Site: OMC Field Conditions: 32°F, sunny, windy

WELL CONDITION

Well Pad	Acceptable	<u>Not Acceptable</u>	Explain: <u>NA</u>
Protective Casing	<u>Acceptable</u>	Not Acceptable	Explain:
Well Casing	<u>Acceptable</u>	Not Acceptable	Explain:
Locking Cap	Acceptable	<u>Not Acceptable</u>	Explain: <u>Need larger lock</u>
Well Label (outside)	Acceptable	<u>Not Acceptable</u>	Explain:
Well Label (inside)	<u>Acceptable</u>	Not Acceptable	Explain:
J-Plug	<u>Acceptable</u>	Not Acceptable	Explain:

PURGE METHOD

Date: 12/4/19 Time: 0852 Method: low-flow
 Total Well Depth (ft) = 12.52
 Depth to Water (ft): = 5.51
 Water Column (ft): = 6.98 (1)
 Comments: 1 volume

OBSERVATIONS

Odor: None, Low, High, H₂S, Fuel Like, Other:

Comments:

Orange flakes

FIELD PARAMETERS

Time	Volume (gal)	Rate (mL/min)	pH (s.u.) +/- 0.1 s.u.	DO (mg/L) +/- 10%	ORP (mV) +/- 10 mV	Specific Conductance (mS/cm) +/- 3%	Temp (°C) +/- 3%	Turbidity (NTU) <10 NTU	Depth to water (feet)
0900	±0.4	350	7.16	2.62	14.5	1.324	9.56	56.3	5.63
0905	±0.8	350	7.16	1.31	-18.2	1.699	9.84	16.2	5.63
0910	±1.2	350	7.17	1.09	-36.6	1.608	9.77	10.6	5.63
0915	±1.6	350	7.17	0.92	-56.7	1.494	9.86	6.6	5.63
0920	±2.0	350	7.18	0.86	-65.6	1.444	9.93	4.0	5.63
0925	±2.5	350	7.17	0.81	-77.2	1.402	9.96	1.3	5.63
0930	±2.9	350	7.18	0.77	-83.5	1.393	9.91	0.2	5.63
0935	±3.1	350	7.18	0.74	-89.1	1.357	9.99	0.0	5.63
0940	±3.8	350	7.18	0.73	-91.5	1.367	10.08	5.8	5.63

SAMPLING

Date: 12/4/19 Time: 0941
 Sample ID: OMC-MW-6265 Method of Sample Collection: grab

Analytical Parameters: Alkalinity/Anions, TOC, MEE, VOCs, sulfide, dissolved metals

Q.C. Sample Type: NA MS/MSD Duplicate Duplicate Sample ID:

Q.C. Parameters: NA

Trash picked up? Y Well locked? No lock

SIGNED/SAMPLER: [Signature]

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: MW-626D Field Crew: JA/KW Purpose of Sampling: OMC Quarterly Sampling
 Site: OMC Field Conditions: 30°F Sunny Windy

WELL CONDITION

Well Pad	<u>Acceptable</u>	Not Acceptable	Explain:
Protective Casing	<u>Acceptable</u>	Not Acceptable	Explain:
Well Casing	<u>Acceptable</u>	Not Acceptable	Explain:
Locking Cap	<u>Acceptable</u>	<u>Not Acceptable</u>	Explain: <u>need bigger lock</u>
Well Label (outside)	<u>Acceptable</u>	Not Acceptable	Explain:
Well Label (inside)	<u>Acceptable</u>	Not Acceptable	Explain:
J-Plug	<u>Acceptable</u>	Not Acceptable	Explain:

PURGE METHOD

Date: 12/4/19 Time: 0853 Method: low-flow
 Total Well Depth (ft): = 29.34
 Depth to Water (ft): = 5.76
 Water Column (ft): = 23.58 3.8
 Comments: 1 volume

OBSERVATIONS

Odor: None Low High H₂S Fuel Like Other:

Comments: cloudy water

FIELD PARAMETERS

Time	Volume (gal)	Rate (mL/min)	pH (s.u.) +/- 0.1 s.u.	DO (mg/L) +/- 10%	ORP (mV) +/- 10 mV	Specific Conductance (mS/cm) +/- 3%	Temp (°C) +/- 3%	Turbidity (NTU) <10 NTU	Depth to water (feet)
0905	0.4	300	7.65	1.49	-176.7	1.454	11.39	30.6	6.40
0910	0.8	300	7.64	0.81	-194.7	1.735	11.68	9.9	6.38
0915	1.2	300	7.72	0.42	-211.7	1.855	11.73	4.4	6.38
0920	1.6	300	7.71	0.38	-218.0	1.909	11.82	4.4	6.35
0925	2.0	300	7.76	0.29	-224.0	1.983	12.00	0.7	6.35
0930	2.4	300	7.75	0.26	-225.5	1.971	11.95	0.7	6.37
0935	2.8	300	7.75	6.24	-222.2	1.964	11.98	0.1	6.37
0940	<u>AMPLE</u>								

SAMPLING

Date: 12/4/19 Time: 0940
 Sample ID: OME-MW-626D Method of Sample Collection: grab

Analytical Parameters: VOC, MNA, DISMIL

Q.C. Sample Type: N/A MS/MSD Duplicate Duplicate Sample ID: N/A

Q.C. Parameters: N/A

Trash picked up? Y Well locked? Y

SIGNED/SAMPLER: [Signature]

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: ST-MU-15 Field Crew: SB/KW Purpose of Sampling: OMC Quarterly Sampling
 Site: OMC Field Conditions: 30°F Sunny calm

WELL CONDITION

Well Pad	<u>Acceptable</u>	Not Acceptable	Explain:
Protective Casing	<u>Acceptable</u>	Not Acceptable	Explain:
Well Casing	<u>Acceptable</u>	Not Acceptable	Explain:
Locking Cap	<u>Acceptable</u>	Not Acceptable	Explain:
Well Label (outside)	<u>Acceptable</u>	Not Acceptable	Explain:
Well Label (inside)	<u>Acceptable</u>	Not Acceptable	Explain:
J-Plug	<u>Acceptable</u>	Not Acceptable	Explain:

PURGE METHOD

Date: 12/5/19 Time: 0735 Method: low-flow
 Total Well Depth (ft): = 11.40
 Depth to Water (ft): = 1.45
 Water Column (ft): = 9.95 1.6
 Comments: 1 volume

OBSERVATIONS

Odor: None Low, High, H₂S, Fuel Like, Other:
 Comments:

FIELD PARAMETERS

Time	Volume (gal)	Rate (mL/min)	pH (s.u.) +/- 0.1 s.u.	DO (mg/L) +/- 10%	ORP (mV) +/- 10 mV	Specific Conductance (mS/cm) +/- 3%	Temp (°C) +/- 3%	Turbidity (NTU) <10 NTU	Depth to water (feet)
0740	0.6	450	7.01	3.90	112.8	1.317	10.98	1.88	1.71
0745	1.2	450	7.06	1.60	-20.9	1.335	11.58	9.7	1.73
0750	1.8	450	7.09	0.81	-62.1	1.376	11.89	3.8	1.73
0755	2.4	450	7.11	0.61	-76.9	1.399	12.05	1.1	1.75
0800	3.0	450	7.12	0.51	-82.5	1.411	12.08	0.2	1.73
0805	3.6	450	7.13	0.58	-90.0	1.419	12.19	0.0	1.73
0810	4.2	450	7.13	0.36	-94.9	1.421	12.27	0.0	1.77
0815	4.8	450	7.13	0.33	-98.3	1.418	12.27	0.0	1.70
0820	SAMPLE								

SAMPLING

Date: 12/5/19 Time: 0820
 Sample ID: OMC-ST-MU-15 Method of Sample Collection: grab
 Analytical Parameters: VOCs, MNA, PIS, MCA, PCBs
 Q.C. Sample Type: N/A MS/MSD Duplicate Duplicate Sample ID: N/A
 Q.C. Parameters: N/A

Trash picked up? 1 Well locked? 1
 SIGNED/SAMPLER: [Signature]

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: ST-MW-1D Field Crew: K. Wilson Purpose of Sampling: OMC Quarterly Sampling
 Site: OMC Field Conditions: Sunny

WELL CONDITION

Well Pad	Acceptable	<u>Not Acceptable</u>	Explain: <u>NA</u>
Protective Casing	<u>Acceptable</u>	Not Acceptable	Explain:
Well Casing	<u>Acceptable</u>	Not Acceptable	Explain:
Locking Cap	<u>Acceptable</u>	Not Acceptable	Explain:
Well Label (outside)	Acceptable	<u>Not Acceptable</u>	Explain:
Well Label (inside)	<u>Acceptable</u>	Not Acceptable	Explain:
J-Plug	<u>Acceptable</u>	Not Acceptable	Explain:

PURGE METHOD

Date: 12/5/19 Time: 0730 Method: low-flow
 Total Well Depth (ft) = 22.91
 Depth to Water (ft): = 1.26
 Water Column (ft): = 21.65 3.5
 Comments: 1 volume

OBSERVATIONS

Odor: None, Low, High, H₂S, Fuel Like, Other:

Comments: Clear Product in well when checking total depth, water level probe covered in product.

FIELD PARAMETERS

Time	Volume (gal)	Rate (mL/min)	pH (s.u.) +/- 0.1 s.u.	DO (mg/L) +/- 10%	ORP (mV) +/- 10 mV	Specific Conductance (mS/cm) +/- 3%	Temp (°C) +/- 3%	Turbidity (NTU) <10 NTU	Depth to water (feet)
0740	0.5	400	6.79	3.58	126.9	1.899	13.20	6.9	1.35
0745	1.0	400	6.80	1.71	78.6	2.175	13.38	4.6	1.36
0750	1.5	400	6.81	1.14	-9.2	2.172	13.46	6.1	1.36
0755	2.0	400	6.82	0.98	-49.3	2.177	13.47	9.5	1.36
0800	2.5	400	6.83	0.92	-60.5	2.167	13.46	8.3	1.36
0805	3.0	400	6.83	0.84	-69.3	2.145	13.56	4.5	1.36
0810	3.5	400	6.83	0.81	-72.4	2.138	13.66	9.5	1.36
0815	4.0	400	6.83	0.79	-75.0	2.154	13.68	9.8	1.36

SAMPLING

Date: 12-5-19 Time: 0818
 Sample ID: OMC-462 ST-MW-1D Method of Sample Collection: grab

Analytical Parameters: PCBs, alkalinity / anions, sulfide, dissolved metals, TOC, MEE, VOCs

Q.C. Sample Type: NA MS/MSD Duplicate Duplicate Sample ID:

Q.C. Parameters: NA

Trash picked up? Y Well locked? Y

SIGNED/SAMPLER: [Signature]

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: ST-MW-55 Field Crew: SG/KW Purpose of Sampling: OMC Quarterly Sampling
 Site: OMC 2S Field Conditions: 3575 Snnm Vlnrly

WELL CONDITION

Well Pad: Acceptable Not Acceptable Explain:
 Protective Casing: Acceptable Not Acceptable Explain:
 Well Casing: Acceptable Not Acceptable Explain:
 Locking Cap: Acceptable Not Acceptable Explain: None
 Well Label (outside): Acceptable Not Acceptable Explain: None
 Well Label (inside): Acceptable Not Acceptable Explain:
 J-Plug: Acceptable Not Acceptable Explain:

PURGE METHOD

Date: 12/4/19 Time: 1300 Method: low-flow
 Total Well Depth (ft): = 10.21
 Depth to Water (ft): = 1.26
 Water Column (ft): = 8.95 1.5
 Comments: 1 volume

OBSERVATIONS

Odor: None Low, High, H₂S, Fuel Like, Other:

Comments:

Muddy orange color, very turbid @ Start of Purge

FIELD PARAMETERS

Time	Volume (gal)	Rate (mL/min)	pH (s.u.) ± 0.1 s.u.	DO (mg/L) ± 10%	ORP (mV) ± 10 mV	Specific Conductance (mS/cm) ± 3%	Temp (°C) ± 3%	Turbidity (NTU) <10 NTU	Depth to water (feet)
1305	0.5	350	7.54	1068	-87.3	0.854	9.63	113.4	1.38
1310	1.0	350	7.24	0.42	-94.7	0.784	9.70	86.4	1.38
1315	1.5	350	7.22	0.27	-103.4	0.728	9.71	52.5	1.39
1320	2.2	400	7.22	0.24	-114.6	0.694	9.70	38.2	1.40
1325	2.7	400	7.22	0.22	-113.3	0.656	9.82	25.0	1.40
1330	3.2	400	7.22	0.20	-119.2	0.649	9.75	21.0	1.40
1335	3.7	400	7.22	0.18	-116.6	0.632	9.80	14.9	1.40
1340	4.3	400	7.22	0.17	-119.1	0.623	9.82	14.0	1.40
1345	4.8	400	7.21	0.15	-118.6	0.619	9.78	11.5	1.40
1350	5.4	400	7.22	0.14	-120.3	0.613	9.72	9.7	1.40
1355	6.0	400	7.21	0.15	-121.0	0.611	9.86	9.3	1.40
1400	6.5	400	7.22	0.12	-123.5	0.610	9.81	8.5	1.40

SAMPLING

Date: 12/4/19 Time: 1405
 Sample ID: OMC-ST-MW-55 2S Method of Sample Collection: grab

Analytical Parameters: VOCS, MNA, Diss Metals, PCBs

Q.C. Sample Type: MS/MSD Duplicate Duplicate Sample ID: SAME

Q.C. Parameters: SAME as Parent

Trash picked up? Y

SIGNED/SAMPLER:

[Signature]

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: ST- HW-02D Field Crew: K.W. Lyon Purpose of Sampling: OMC Quarterly Sampling
 Site: OMC Field Conditions: 37°F, sunny, high winds

WELL CONDITION

Well Pad	<u>Acceptable</u>	Not Acceptable	Explain:
Protective Casing	<u>Acceptable</u>	Not Acceptable	Explain:
Well Casing	<u>Acceptable</u>	Not Acceptable	Explain:
Locking Cap	<u>Acceptable</u>	Not Acceptable	Explain:
Well Label (outside)	<u>Acceptable</u>	<u>Not Acceptable</u>	Explain:
Well Label (inside)	<u>Acceptable</u>	Not Acceptable	Explain:
J-Plug	<u>Acceptable</u>	Not Acceptable	Explain:

PURGE METHOD

Date: 12-4-19 Time: 12:55 Method: low-flow
 Total Well Depth (ft) = 22.19
 Depth to Water (ft): = 1.26
 Water Column (ft): = 20.93 3.4
 Comments: 1 volume

OBSERVATIONS

Odor: None, Low, High, H₂S, Fuel Like, Other:
 Comments: clear

FIELD PARAMETERS

Time	Volume (gal)	Rate (mL/min)	pH (s.u.) +/- 0.1 s.u.	DO (mg/L) +/- 10%	ORP (mV) +/- 10 mV	Specific Conductance (mS/cm) +/- 3%	Temp (°C) +/- 3%	Turbidity (NTU) <10 NTU	Depth to water (feet)
1305		400	6.96	1.94	-13.0	1.074	12.28	97	1.43
1310		400	6.91	1.31	-55.3	1.075	12.34	61.7	1.43
1315		400	6.93	1.08	-82.8	1.101	12.43	41.4	1.43
1320		400	6.95	0.94	-92.1	1.113	12.39	31.6	1.43
1325		400	6.96	0.82	-102.0	1.123	12.32	20.1	1.43
1330		400	6.97	0.75	-105.6	1.122	12.45	14.1	1.43
1335		400	6.97	0.72	-110.1	1.079	12.52	10.4	1.43
1340		400	6.97	0.69	-110.1	1.102	12.49	7.6	1.43
1345	✓	400	6.98	0.65	-115.2	1.129	12.50	4.1	1.43
1350	~5.5	400	6.98	0.65	-116.1	1.121	12.57	3.8	1.43

SAMPLING

Date: 12-4-19 Time: 1352
 Sample ID: OMC-ST-MW-2D Method of Sample Collection: grab
 Analytical Parameters: PCBs, Alkalinity, Anions, sulfide, dissolved metals, TOC, MEE, VOCs
 Q.C. Sample Type: MS/MSD Duplicate Duplicate Sample ID:
 Q.C. Parameters: All of above
 Trash picked up? Y Well locked? Y
 SIGNED/SAMPLER: [Signature]

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: ST-MW 3D Field Crew: K. Wilson Purpose of Sampling: OMC Quarterly Sampling
 Site: OMC Field Conditions: 35°F, sunny

WELL CONDITION

Well Pad	<u>Acceptable</u>	Not Acceptable	Explain:
Protective Casing	<u>Acceptable</u>	Not Acceptable	Explain:
Well Casing	<u>Acceptable</u>	Not Acceptable	Explain:
Locking Cap	<u>Acceptable</u>	Not Acceptable	Explain:
Well Label (outside)	<u>Acceptable</u>	<u>Not Acceptable</u>	Explain:
Well Label (inside)	<u>Acceptable</u>	Not Acceptable	Explain:
J-Plug	<u>Acceptable</u>	Not Acceptable	Explain:

PURGE METHOD

Date: 12/5/19 Time: 0900 Method: low-flow
 Total Well Depth (ft) = 18.77 → silt in bottom
 Depth to Water (ft): = 1.02
 Water Column (ft): = 17.75 2.9
 Comments: 1 volume

OBSERVATIONS

Odor: None, Low, High, H₂S, Fuel Like, Other:
 Comments: clear

FIELD PARAMETERS

Time	Volume (gal)	Rate (mL/min)	pH (s.u.) ±0.1 s.u.	DO (mg/L) ±10%	ORP (mV) ±10 mV	Specific Conductance (mS/cm) ±3%	Temp (°C) ±3%	Turbidity (NTU) <10 NTU	Depth to water (feet)
0910	0.5	425	7.10	3.44	59.0	1.445	13.67	48.3	1.13
0915	1.0	425	7.03	1.67	46.7	1.539	13.50	25.4	1.14
0925	1.5	425	7.04	1.21	15.8	1.579	13.53	13.4	1.13
0930	2.0	425	7.03	1.08	-9.5	1.551	13.50	15.0	1.13
0935	2.5	425	7.02	1.00	-28.2	1.547	13.76	9.0	1.14
0940	3.0	425	7.01	0.93	-49.4	1.546	13.80	6.3	1.14
0945	3.5	425	7.02	0.88	-59.6	1.552	13.78	5.1	1.14
0950	4.0	425	7.06	0.84	-67.2	1.547	13.84	4.2	1.14
0955	4.5	425	7.03	0.81	-73.9	1.545	13.87	6.7	1.14
1000	5.0	425	7.04	0.79	-78.1	1.544	13.86	8.1	1.14
1005	5.5	425	7.01	0.78	-81.3	1.533	13.79	9.2	1.14

SAMPLING

Date: 12-5-19 Time: 1006
 Sample ID: OMC-ST-MW-3D Method of Sample Collection: grab
 Analytical Parameters: Alkalinity/Anions, PCBs, dissolved metals, TOC, MEE, VOC, sulfide
 Q.C. Sample Type: NA MS/MSD Duplicate Duplicate Sample ID:
 Q.C. Parameters: NA
 Trash picked up? X Well locked? X
 SIGNED/SAMPLER: [Signature]

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: ST-MW-35 Field Crew: SA/KW Purpose of Sampling: OMC Quarterly Sampling
 Site: OMC Field Conditions: 35°F Sunny

WELL CONDITION

Well Pad	<u>Acceptable</u>	Not Acceptable	Explain:
Protective Casing	<u>Acceptable</u>	Not Acceptable	Explain:
Well Casing	<u>Acceptable</u>	Not Acceptable	Explain:
Locking Cap	<u>Acceptable</u>	Not Acceptable	Explain:
Well Label (outside)	<u>Acceptable</u>	Not Acceptable	Explain:
Well Label (inside)	<u>Acceptable</u>	Not Acceptable	Explain:
J-Plug	<u>Acceptable</u>	Not Acceptable	Explain:

PURGE METHOD

Date: 12/5/19 Time: 0705 Method: low-flow
 Total Well Depth (ft) = 10.52
 Depth to Water (ft): = 1.11
 Water Column (ft): = 9.41 1.5
 Comments: 1 volume

OBSERVATIONS

Odor: None Low High H₂S Fuel Like Other:

Comments: Slightly ORANGE @ Start of Purge

FIELD PARAMETERS

Time	Volume (gal)	Rate (mL/min)	pH (s.u.) +/- 0.1 s.u.	DO (mg/L) +/- 10%	ORP (mV) +/- 10 mV	Specific Conductance (mS/cm) +/- 3%	Temp (°C) +/- 3%	Turbidity (NTU) <10 NTU	Depth to water (feet)
0915	0.5	400	8.11	6.60	27.4	0.818	11.57	71.8	1.11
0920	1.0	400	7.52	0.78	-55.6	0.804	11.71	39.9	1.11
0925	1.5	400	7.39	0.58	-75.8	0.812	11.65	20.5	1.11
0930	2.0	400	7.35	0.38	-80.6	0.824	11.67	14.6	1.11
0935	2.5	400	7.37	0.35	-83.5	0.842	11.74	7.21	1.11
0940	3.0	400	7.33	0.27	-86.3	0.855	11.84	3.2	1.11
0945	3.5	400	7.30	0.23	-87.8	0.859	11.84	1.7	1.11
0950	4.0	400	7.32	0.24	-88.2	0.864	11.87	0.7	1.11
0955	<u>SAMPLE</u>								

SAMPLING

Date: 12/5/19 Time: 0955
 Sample ID: OMC-ST-MW-35 Method of Sample Collection: grab

Analytical Parameters: VOCs, MNAs, Diss Met, PCBs

Q.C. Sample Type: N/A MS/MSD Duplicate Duplicate Sample ID: N/A

Q.C. Parameters: N/A

Trash picked up? Well locked?

SIGNED/SAMPLER: [Signature]

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: ST-MW-45 Field Crew: L. SCHARCH Purpose of Sampling: OMC Quarterly Sampling
 Site: OMC Field Conditions: SUNNY 50°F

WELL CONDITION

Well Pad	Acceptable	Not Acceptable	Explain:
Protective Casing	Acceptable	Not Acceptable	Explain:
Well Casing	Acceptable	Not Acceptable	Explain:
Locking Cap	Acceptable	Not Acceptable	Explain: <u>DOES NOT LOCK</u>
Well Label (outside)	Acceptable	Not Acceptable	Explain:
Well Label (inside)	Acceptable	Not Acceptable	Explain:
J-Plug	Acceptable	Not Acceptable	Explain: <u>J-PLUG OBSTRUCTS FULL SEAL</u>

PURGE METHOD

Date: _____ Time: 9:23 Method: low-flow
 Total Well Depth (ft) = 11.79
 Depth to Water (ft): = 2.56
 Water Column (ft): = 9.23 1.5
 Comments: _____ 1 volume

OBSERVATIONS

Odor: None Low High H₂S Fuel Like Other:
 Comments: TURBID UNTIL 9:47

FIELD PARAMETERS

Time	Volume (gal)	Rate (mL/min)	pH (s.u.) +/- 0.1 s.u.	DO (mg/L) +/- 10%	ORP (mV) +/- 10 mV	Specific Conductance (mS/cm) +/- 3%	Temp (°C) +/- 3%	Turbidity (NTU) <10 NTU	Depth to water (feet)
9:35	↓	250	7.101	1.87	214.9	1.632	11.84	46.6	2.41
9:40	↓	250	7.48	1.23	225.2	1.701	11.78	19.1	2.61
9:45	↓	250	7.42	0.83	226.7	1.706	11.90	13.9	2.61
9:50	↓	250	7.40	0.67	226.9	1.712	11.98	7.6	2.61
9:55	↓	250	7.40	0.66	226.6	1.714	12.08	4.6	2.61
10:00	N3	250	7.40	0.60	226.1	1.717	12.11	4.0	2.61
10:05		SAMPLED							

SAMPLING

Date: 12-5-2019 Time: 10:05
 Sample ID: OMC-ST-MW-45 Method of Sample Collection: grab
 Analytical Parameters: VOCS, Metals, MHA, PCBs
 Q.C. Sample Type: N/A MS/MSD Duplicate Duplicate Sample ID: N/A
 Q.C. Parameters: N/A
 Trash picked up? Y Well locked? Y
 SIGNED/SAMPLER: Roni Scharch

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: ST-MW-4D Field Crew: K.M.A Purpose of Sampling: OMC Quarterly Sampling
 Site: OMC Field Conditions: 40 F Sunny

WELL CONDITION

Well Pad	Acceptable	Not Acceptable	Explain:
Protective Casing	Acceptable	Not Acceptable	Explain:
Well Casing	Acceptable	Not Acceptable	Explain:
Locking Cap	Acceptable	Not Acceptable	Explain: <u>→ jplugs obstruct total seal</u>
Well Label (outside)	Acceptable	Not Acceptable	Explain:
Well Label (inside)	Acceptable	Not Acceptable	Explain:
J-Plug	Acceptable	Not Acceptable	Explain:

pg 1 of 2

PURGE METHOD

Date: 12/5/19 Time: 0925 Method: low-flow
 Total Well Depth (ft) = 20.80
 Depth to Water (ft): = 2.55
 Water Column (ft): = 18.25 3.0
 Comments: 1 volume

OBSERVATIONS

Odor: None Low High H₂S Fuel Like Other:

Comments: slightly yellow w/ high turbidity

FIELD PARAMETERS

Time	Volume (gal)	Rate (mL/min)	pH (s.u.)	DO (mg/L)	ORP (mV)	Specific Conductance (mS/cm)	Temp (°C)	Turbidity (NTU)	Depth to water (feet)
	--	--	+/- 0.1 s.u.	+/- 10%	+/- 10 mV	+/- 3%	+/- 3%	<10 NTU	--
0935		250	8.59	10.12	-26.4	0.160	12.57	42.1	3.33
0940		250	8.51	8.39	-48	0.178	12.88	112.3	3.38
0945		250	8.30	6.36	-0.2	0.160	13.32	119.6	3.38
<u>(Km)</u> 0950		<u>2 Emptied Flow through cell to check turbidity</u>							
0950		225	8.21	4.37	5.2	0.295	13.56	125.2	3.50
0955		200	8.12	2.79	9.0	0.349	13.60	101.3	3.50
1000		200	8.20	6.05	7.0	0.194	12.72	24.2	3.53
1005		200	8.05	4.30	18.4	0.374	13.12	24.1	3.49
1010		200	7.96	2.10	18.4	0.574	13.27	18.1	3.49
1015		200	7.87	1.94	21.2	0.597	13.46	14.5	3.49
1020		200	7.82	1.80	21.0	0.687	13.57	7.7	3.49
1025		200	7.82	1.72	20.8	0.732	13.42	6.0	3.49

SAMPLING

Date: 12/5/19 Time: 1040
 Sample ID: OMC-ST-MW-4D Method of Sample Collection: grab
 Analytical Parameters: VOC, PCB, Dissolved Metals, MNA
 Q.C. Sample Type: N/A MS/MSD Duplicate Duplicate Sample ID: N/A
 Q.C. Parameters: N/A

Trash picked up? Y Well locked? Y

SIGNED/SAMPLER:

KMA

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: ST-MW-40 Field Crew: K. Ma Purpose of Sampling: OMC Quarterly Sampling
 Site: OMC Field Conditions: 40F Sunny

WELL CONDITION

Well Pad	Acceptable	Not Acceptable	Explain:
Protective Casing	Acceptable	Not Acceptable	Explain:
Well Casing	Acceptable	Not Acceptable	Explain:
Locking Cap	Acceptable	Not Acceptable	Explain:
Well Label (outside)	Acceptable	Not Acceptable	Explain:
Well Label (inside)	Acceptable	Not Acceptable	Explain:
J-Plug	Acceptable	Not Acceptable	Explain:

pg 2 of 2

See pg. 1

PURGE METHOD

Date: Time: Method: low-flow

Total Well Depth (ft) =

Depth to Water (ft): =

Water Column (ft): =

Comments: 1 volume

See pg. 1

OBSERVATIONS

Odor: None, Low, High, H₂S, Fuel Like, Other:

Comments:

See pg. 1

FIELD PARAMETERS

Time	Volume (gal)	Rate (mL/min)	pH (s.u.) +/- 0.1 s.u.	DO (mg/L) +/- 10%	ORP (mV) +/- 10 mV	Specific Conductance (mS/cm) +/- 3%	Temp (°C) +/- 3%	Turbidity (NTU) <10 NTU	Depth to water (feet)
1030	↓	250	7.76	1.72	21.9	0.746	13.47	7.6	3.49
1035	↘	250	7.75	1.72	22.3	0.756	13.54	6.3	3.49
1040									

samp'd @ 1040

SAMPLING

Date: Time: Method of Sample Collection: grab

Analytical Parameters:

Q.C. Sample Type: MS/MSD Duplicate Duplicate Sample ID:

Q.C. Parameters:

Trash picked up? Well locked?

SIGNED/SAMPLER:

See pg. 1

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: ST-MW-55 Field Crew: LISCHARCH Purpose of Sampling: OMC Quarterly Sampling
 Site: OMC Field Conditions: SUNNY / PARTLY CLOUDY / 41°F

WELL CONDITION

Well Pad	Acceptable	Not Acceptable	Explain:
Protective Casing	Acceptable	Not Acceptable	Explain:
Well Casing	Acceptable	Not Acceptable	Explain:
Locking Cap	Acceptable	Not Acceptable	Explain: <u>NO LOCK</u>
Well Label (outside)	Acceptable	Not Acceptable	Explain:
Well Label (inside)	Acceptable	Not Acceptable	Explain:
J-Plug	Acceptable	Not Acceptable	Explain:

PURGE METHOD

Date: 12/4/19 Time: 12:53 Method: low-flow
 Total Well Depth (ft) = 14.19
 Depth to Water (ft): = 3.3 3.29 (km)
 Water Column (ft): = 10.9 1.8
 Comments: 1 volume

OBSERVATIONS

Odor: None, Low, High, H₂S, Fuel Like, Other:

Comments: BLACK SPECS / PIECES IN GROUND WATER THROUGHOUT SAMPLING

FIELD PARAMETERS

Time	Volume (gal)	Rate (mL/min)	pH (s.u.) +/- 0.1 s.u.	DO (mg/L) +/- 10%	ORP (mV) +/- 10 mV	Specific Conductance (mS/cm) +/- 3%	Temp (°C) +/- 3%	Turbidity (NTU) <10 NTU	Depth to water (feet)
12:55		200	7.32	1.81	94.3	0.825	12.12	14.6	3.35
13:00		220	7.26	0.88	89.1	0.842	11.58	11.0	3.35
13:05		220	7.18	0.51	85.4	0.835	11.64	8.5	3.35
13:10		220	7.14	0.53	84.0	0.833	11.70	7.7	3.35
13:15	N3	220	7.12	0.47	82.8	0.829	11.60	6.3	3.35
13:20		SAMPLED @ 13:20							

SAMPLING

Date: 12/4/2019 Time: 13:20
 Sample ID: OMC-MW-55 Method of Sample Collection: grab

Analytical Parameters: OMC-ST-MW-55
VOCS, Metals, MNA, PCBs
 Q.C. Sample Type: N/A MS/MSD Duplicate Duplicate Sample ID: N/A

Q.C. Parameters: N/A

Trash picked up? Y Well locked? Y

SIGNED/SAMPLER: Rac Scharch

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: AST-MW-5D Field Crew: KMa Purpose of Sampling: OMC Quarterly Sampling
 Site: OMC Field Conditions: 40°F Windy

WELL CONDITION

	Acceptable	Not Acceptable	Explain:
Well Pad			<u>N/A</u>
Protective Casing	<u>Acceptable</u>	Not Acceptable	Explain:
Well Casing	<u>Acceptable</u>	Not Acceptable	Explain:
Locking Cap	<u>Acceptable</u>	Not Acceptable	Explain:
Well Label (outside)	<u>Acceptable</u>	Not Acceptable	Explain:
Well Label (inside)	<u>Acceptable</u>	Not Acceptable	Explain:
J-Plug	<u>Acceptable</u>	Not Acceptable	Explain:

PURGE METHOD

Date: 12/4/19 Time: 1245 Method: low-flow
 Total Well Depth (ft) = 25.45
 Depth to Water (ft): = 3.52
 Water Column (ft): = 21.93 3.6
 Comments: 1 volume

OBSERVATIONS

Odor: None, Low, High, H₂S, Fuel Like, Other:
 Comments: Clear

FIELD PARAMETERS

Time	Volume (gal)	Rate (mL/min)	pH (s.u.) ±0.1 s.u.	DO (mg/L) ±10%	ORP (mV) ±10 mV	Specific Conductance (mS/cm) ±3%	Temp (°C) ±3%	Turbidity (NTU) <10 NTU	Depth to water (feet)
1250	1	300	7.48	2.27	-92.8	1.955	14.02	0	3.32
1255		300	7.47	1.75	-131.7	1.595	13.94	0	3.30
1300		300	7.47	1.54	-137.6	1.433	14.16	0	3.30
1305		300	7.47	1.48	-139.0	1.421	14.16	0	3.30
1310	✓	300	7.46	1.33	-142.9	1.426	14.26	0	3.30
1315	✓	300	7.46	1.32	-142.4	1.429	14.22	0	3.30
1320	N/A	300	7.46	1.30	-142.0	1.437	14.20	0	3.30
— Sampled @ 1325 —									

SAMPLING

Date: 12/4/19 Time: 1325
 Sample ID: OMC-ST-MW-5D Method of Sample Collection: grab
 Analytical Parameters: VOC, PCB, dissolved metals, MNA
 Q.C. Sample Type: N/A MS/MSD Duplicate Duplicate Sample ID: N/A
 Q.C. Parameters: N/A
 Trash picked up? 4 Well locked? 4
 SIGNED/SAMPLER: KMa

Monitoring Well

Field Data Sheet - OMC Groundwater Site

Well Number: **W-5**

Field Crew: **M. Boyea**

Purpose of Sampling:

OMC Quarterly Sampling

Site: OMC

Field Conditions: **SUNNY, WINDY**

WELL CONDITION

Well Pad	Acceptable	Not Acceptable	Explain:
Protective Casing	Acceptable	Not Acceptable	Explain:
Well Casing	Acceptable	Not Acceptable	Explain:
Locking Cap	Acceptable	Not Acceptable	Explain:
Well Label (outside)	Acceptable	Not Acceptable	Explain:
Well Label (inside)	Acceptable	Not Acceptable	Explain:
J-Plug	Acceptable	Not Acceptable	Explain: NO J-PLUG

PURGE METHOD

Date: **12-4-19** Time: **07:40** Method: low-flow

Total Well Depth (ft) = **35.16**

Depth to Water (ft) = **6.15**

Water Column (ft): = **30.01** **4.9**

Comments: 1 volume

OBSERVATIONS

Odor: **None** Low High H₂S Fuel Like Other:

Comments:

FIELD PARAMETERS

Time	Volume (gal)	Rate (mL/min)	pH (s.u.) +/- 0.1 s.u.	DO (mg/L) +/- 10%	ORP (mV) +/- 10 mV	Specific Conductance (mS/cm) +/- 3%	Temp (°C) +/- 3%	Turbidity (NTU) <10 NTU	Depth to water (feet)
07:55	0.25	310	7.67	3.19 8.19	103.5	1.422	10.06	0.4	5.32
08:00	0.5	310	7.40	3.24	108.7	1.823	10.72	0.0	5.32
08:05	1.0	310	7.16	1.37	98.8	2.477	10.75	0.0	5.32
08:10	1.5	310	7.23	1.06	75.3	2.622	10.68	0.0	5.32
08:15	1.75	310	7.29	1.05	67.3	2.689	10.67	0.0	5.32
08:20	2.0	310	7.31	1.00	66.0	2.719	10.62	0.0	5.32
08:25	2.5	310	7.32	0.85	66.0	2.726	10.71	0.0	5.32
08:30	3.0	310	7.33	0.79	67.3	2.725	10.64	0.0	5.32
08:35	SAMPLE								
08:40	FD SAMPLE								

SAMPLING

Date: **12-4-19**

Time: **08:35**

Sample ID: **OMC-W-5**

Method of Sample Collection: grab

Analytical Parameters: **VOC, PCB, MET, D. GAS, TOC, ANIONS, ALK, SULFIDE**

Q.C. Sample Type:

MS/MSD

Duplicate

Duplicate Sample ID: **OMC-W-5-R 08:40**

Q.C. Parameters: **VOC, PCB, MET, D. GAS, TOC, ANIONS, ALK, SULFIDE**

Trash picked up? **Y**

Well locked? **Y**

SIGNED/SAMPLER:

M. Boyea

Attachment 2

Data Usability Evaluation

Data Usability Evaluation—December 2019

OMC Plant 2 Site (OU4), Waukegan, Illinois

WA No. 237-RARA-0528, Contract No. EP-S5-06-01

PREPARED FOR: U.S. Environmental Protection Agency (EPA)

PREPARED BY: Nichole Boyea/CH2M HILL, Inc. (CH2M)

DATE: April 3, 2020

This memorandum presents the results of the data usability evaluation of groundwater data from the Outboard Marine Corporation (OMC) Plant 2 Site in Waukegan, Illinois. Groundwater samples were collected December 2 through 6, 2019, and analyzed by either the subcontract laboratory, Katahdin Analytical, or a laboratory in EPA's Contract Laboratory Program (CLP). The analytical results will be used to evaluate the performance of in situ treatment of the remaining high-concentration source areas and the sitewide monitored natural attenuation remedy.

- Eighty-two aqueous samples, including quality assurance (QA)/quality control (QC) samples (7 field duplicates [FDs], 4 matrix spikes [MSs], 4 matrix spike duplicates [MSDs], 2 trip blanks [TBs], 1 equipment blank [EB], and 1 field blank [FB]) were analyzed for volatile organic compounds (VOCs).
- Eighty aqueous samples, including QA/QC samples (7 FDs, 4 MSs, 4 MSDs, 1 EB, and 1 FB) were analyzed for dissolved metals.
- Thirty aqueous samples, including QA/QC samples (2 FDs, 2 MSs, 2 MSDs, 1 EB, and 1 FB) were analyzed for polychlorinated biphenyl (PCB) Aroclors.
- Eighty samples were analyzed for monitored natural attenuation (MNA) parameters (alkalinity, anions [chloride, nitrate, nitrite, sulfate], sulfide, dissolved gases [methane, ethane, ethene], and total organic carbon [TOC]), including QA/QC samples (7 FDs, 4 MSs, 4 MSDs, 1 EB, and 1 FB).

Table 1 lists the parameters, methods, and the laboratory performing the analysis.

Table 1. Analytical Parameters

Data Usability Evaluation—December 2019

OMC Plant 2 Site (OU4), Waukegan, Illinois

Parameter Class	Method	Laboratory Type	Laboratory
VOCs	CLP SOW SOM02.4	CLP Lab	Shealy Environmental Services West Columbia, South Carolina
PCB Aroclors	CLP SOW SOM02.4	CLP Lab	
Dissolved Metals (Arsenic, Iron, Manganese)	CLP SOW ISM02.4	CLP Lab	Chemtex Port Arthur, Texas
Alkalinity	SM 2320B	Subcontract Lab	Katahdin Analytical Services Scarborough, Maine
Anions (Chloride, Nitrate, Nitrite, Sulfate)	EPA 300.0	Subcontract Lab	
Sulfide	SW 846 9034	Subcontract Lab	
Dissolved Gases (Methane, Ethane, Ethene)	RSK175	Subcontract Lab	
TOC	SW846 9060	Subcontract Lab	

As part of the QA process outlined in the site-specific quality assurance project plan (QAPP) (CH2M 2013), QAPP Addendum II (CH2M 2017), and QAPP Addendum III (CH2M 2019), QC samples were collected in the field to complement the assessment of overall data quality and usability. The QC samples consisted of FDs, aliquots for laboratory MS/MSD, FB, EB, and VOC TB samples. Table 2 presents the sample delivery groups (SDGs), sample identifications (IDs), and station locations.

Table 2. Sample Summary by SDG and Sample ID

Data Usability Evaluation - December 2019

OMC Plant 2 Site (OU4), Waukegan, Illinois

Well ID	CLP Organics			CLP Inorganics			Subcontract MNA			
	CLP #	VOC SDG	PCB SDG	CLP #	Metals SDG	SAS #	Alkalinity, Anions SDG	Sulfide SDG	TOC SDG	Dissolved Gases SDG
OMC-EB-120319	ETFN2	ETFF5	ETFF5	METFN2	METFG8	20CO01-71	TM2704	TM2704	TM2704	TM2704
OMC-FB-120319	ETFN3	ETFF5	ETFF5	METFN3	METFG8	20CO01-72	TM2704	TM2704	TM2704	TM2704
OMC-MW-11D	ETFF2	ETFF5	-	METFF2	METFF2	20CO01-01	TM2704	TM2704	TM2704	TM2704
OMC-MW-11D-R	ETFF3	ETFF5	-	METFF3	METFF2	20CO01-02	TM2704	TM2704	TM2704	TM2704
OMC-MW-11S	ETFF4	ETFF5	-	METFF4	METFF2	20CO01-03	TM2704	TM2704	TM2704	TM2704
OMC-MW-3D	ETFF5	ETFF5	ETFF5	METFF5	METFF2	20CO01-04	TM2704	TM2704	TM2704	TM2704
OMC-MW-3S	ETFF6	ETFF5	-	METFF6	METFF2	20CO01-05	TM2704	TM2704	TM2704	TM2704
OMC-MW-501D	ETFF7	ETFF5	ETFF5	METFF7	METFF2	20CO01-06	TM2704	TM2704	TM2704	TM2704
OMC-MW-501S	ETFF8	ETFF5	ETFF5	METFF8	METFF2	20CO01-07	TM2704	TM2704	TM2704	TM2704
OMC-MW-513D	ETFF9	ETFF5	-	METFF9	METFF2	20CO01-08	TM2704	TM2704	TM2704	TM2704
OMC-MW-513S	ETFG0	ETFF5	-	METFG0	METFF2	20CO01-09	TM2704	TM2704	TM2704	TM2704
OMC-MW-516D	ETFG1	ETFF5	-	METFG1	METFF2	20CO01-10	TM2661	TM2704	TM2704	TM2704
OMC-MW-516S	ETFG2	ETFF5	-	METFG2	METFF2	20CO01-11	TM2661	TM2704	TM2704	TM2704
OMC-MW-528D	ETFG3	ETFG3	-	METFG3	METFG3	20CO01-12	TM2769	TM2769	TM2769	TM2769
OMC-MW-528S	ETFG4	ETFG3	-	METFG4	METFG3	20CO01-13	TM2769	TM2769	TM2769	TM2769
OMC-MW-600D	ETFG5	ETFM1	-	METFG5	METFM1	20CO01-14	TM2892	TM2892	TM2892	TM2892
OMC-MW-600S	ETFG6	ETFM1	-	METFG6	METFM1	20CO01-15	TM2892	TM2892	TM2892	TM2892
OMC-MW-601D	ETFG7	ETFG3	-	METFG7	METFF2	20CO01-16	TM2661	TM2704	TM2704	TM2704
OMC-MW-601S	ETFG8	ETFG3	-	METFG8	METFG8	20CO01-17	TM2661	TM2704	TM2704	TM2704
OMC-MW-602D	ETFG9	ETFG3	-	METFG9	METFG3	20CO01-18	TM2769	TM2769	TM2769	TM2769
OMC-MW-602D-R	ETFH0	ETFG3	-	METFH0	METFG3	20CO01-19	TM2769	TM2769	TM2769	TM2769

Table 2. Sample Summary by SDG and Sample ID

Data Usability Evaluation - December 2019

OMC Plant 2 Site (OU4), Waukegan, Illinois

Well ID	CLP Organics			CLP Inorganics			Subcontract MNA			
	CLP #	VOC SDG	PCB SDG	CLP #	Metals SDG	SAS #	Alkalinity, Anions SDG	Sulfide SDG	TOC SDG	Dissolved Gases SDG
OMC-MW-602S	ETFH1	ETFG3	-	METFH1	METFG3	20CO01-20	TM2769	TM2769	TM2769	TM2769
OMC-MW-603D	ETFH2	ETFM1	-	METFH2	METFG8	20CO01-21	TM2885, TM2887	TM2885, TM2887	TM2892	TM2892
OMC-MW-603S	ETFH3	ETFM1	-	METFH3	METFG8	20CO01-22	TM2885, TM2887	TM2885, TM2887	TM2892	TM2892
OMC-MW-604D	ETFH4	ETFM1	-	METFH4	METFG8	20CO01-23	TM2885, TM2887	TM2885, TM2887	TM2892	TM2892
OMC-MW-604S	ETFH5	ETFM1	-	METFH5	METFG8	20CO01-24	TM2885, TM2887	TM2885, TM2887	TM2892	TM2892
OMC-MW-605D	ETFH6	ETFM1	-	METFH6	METFG8	20CO01-25	TM2885, TM2887	TM2885, TM2887	TM2892	TM2892
OMC-MW-605D-R	ETFH7	ETFM1	-	METFH7	METFG8	20CO01-26	TM2885, TM2887	TM2885, TM2887	TM2892	TM2892
OMC-MW-605S	ETFH8	ETFM1	-	METFH8	METFG8	20CO01-27	TM2885, TM2887	TM2885, TM2887	TM2892	TM2892
OMC-MW-606D	ETFH9	ETFM1	-	METFH9	METFM1	20CO01-28	TM2892	TM2892	TM2892	TM2892
OMC-MW-606S	ETFJ0	ETFM1	-	METFJ0	METFM1	20CO01-29	TM2892	TM2892	TM2892	TM2892
OMC-MW-607D	ETFJ1	ETFG3	-	METFJ1	METFG3	20CO01-30	TM2769	TM2769	TM2769	TM2769
OMC-MW-607S	ETFJ2	ETFG3	-	METFJ2	METFG3	20CO01-31	TM2769	TM2769	TM2769	TM2769
OMC-MW-610D	ETFJ3	ETFF5	ETFF5	METFJ3	METFF2	20CO01-32	TM2704	TM2704	TM2704	TM2704
OMC-MW-610S	ETFJ4	ETFF5	ETFF5	METFJ4	METFF2	20CO01-33	TM2704	TM2704	TM2704	TM2704
OMC-MW-612D	ETFJ5	ETFM1	-	METFJ5	METFM1	20CO01-34	TM2892	TM2892	TM2892	TM2892
OMC-MW-612S	ETFJ6	ETFM1	-	METFJ6	METFM1	20CO01-35	TM2892	TM2892	TM2892	TM2892
OMC-MW-612S-R	ETFJ7	ETFM1	-	METFJ7	METFM1	20CO01-36	TM2892	TM2892	TM2892	TM2892
OMC-MW-613D	ETFJ8	ETFM1	ETFM0	METFJ8	METFG8	20CO01-37	TM2885, TM2887	TM2885, TM2887	TM2892	TM2892
OMC-MW-613S	ETFJ9	ETFM1	-	METFJ9	METFG8	20CO01-38	TM2885, TM2887	TM2885, TM2887	TM2892	TM2892
OMC-MW-614D	ETFK0	ETFM1	-	METFK0	METFG8	20CO01-39	TM2885, TM2887	TM2885, TM2887	TM2892	TM2892
OMC-MW-614S	ETFK1	ETFM1	-	METFK1	METFG8	20CO01-40	TM2885, TM2887	TM2885, TM2887	TM2892	TM2892
OMC-MW-615D	ETFK2	ETFG3	-	METFK2	METFG3	20CO01-41	TM2769	TM2769	TM2769	TM2769

Table 2. Sample Summary by SDG and Sample ID

Data Usability Evaluation - December 2019

OMC Plant 2 Site (OU4), Waukegan, Illinois

Well ID	CLP Organics			CLP Inorganics			Subcontract MNA			
	CLP #	VOC SDG	PCB SDG	CLP #	Metals SDG	SAS #	Alkalinity, Anions SDG	Sulfide SDG	TOC SDG	Dissolved Gases SDG
OMC-MW-615S	ETFK3	ETFG3	-	METFK3	METFG3	20CO01-42	TM2769	TM2769	TM2769	TM2769
OMC-MW-619D	ETFK4	ETFG3	-	METFK4	METFF2	20CO01-43	TM2704	TM2704	TM2704	TM2704
OMC-MW-619S	ETFK5	ETFG3	-	METFK5	METFF2	20CO01-44	TM2704	TM2704	TM2704	TM2704
OMC-MW-620D	ETFK6	ETFG3	-	METFK6	METFG3	20CO01-45	TM2769	TM2769	TM2769	TM2769
OMC-MW-620S	ETFK7	ETFG3	-	METFK7	METFG3	20CO01-46	TM2769	TM2769	TM2769	TM2769
OMC-MW-621D	ETFK8	ETFM1	-	METFK8	METFM1	20CO01-47	TM2892	TM2892	TM2892	TM2892
OMC-MW-621S	ETFK9	ETFK9	-	METFK9	METFM1	20CO01-48	TM2892	TM2892	TM2892	TM2892
OMC-MW-621S-R	ETFL0	ETFK9	-	METFL0	METFM1	20CO01-49	TM2892	TM2892	TM2892	TM2892
OMC-MW-623D	ETFL1	ETFF5	ETFF5	METFL1	METFF2	20CO01-50	TM2704	TM2704	TM2704	TM2704
OMC-MW-623S	ETFL2	ETFF5	ETFF5	METFL2	METFF2	20CO01-51	TM2704	TM2704	TM2704	TM2704
OMC-MW-624D	ETFL3	ETFF5	ETFF5	METFL3	METFF2	20CO01-52	TM2704	TM2704	TM2704	TM2704
OMC-MW-624S	ETFL4	ETFF5	ETFF5	METFL4	METFG8	20CO01-53	TM2704	TM2704	TM2704	TM2704
OMC-MW-624S-R	ETFL5	ETFF5	ETFF5	METFL5	METFG8	20CO01-54	TM2704	TM2704	TM2704	TM2704
OMC-MW-625D	ETFM8	ETFK9	-	METFM8	METFM1	20CO01-67	TM2885, TM2887	TM2885, TM2887	TM2892	TM2892
OMC-MW-625S	ETFM9	ETFK9	-	METFM9	METFM1	20CO01-68	TM2885, TM2887	TM2885, TM2887	TM2892	TM2892
OMC-MW-626D	ETFN0	ETFG3	-	METFN0	METFG3	20CO01-69	TM2769	TM2769	TM2769	TM2769
OMC-MW-626S	ETFN1	ETFM0	-	METFN1	METFG3	20CO01-70	TM2769	TM2769	TM2769	TM2769
OMC-ST-MW-1D	ETFL8	ETFK9	ETFK9	METFL8	METFG8	20CO01-57	TM2885, TM2887	TM2885, TM2887	TM2892	TM2892
OMC-ST-MW-1S	ETFL9	ETFK9	ETFK9	METFL9	METFG8	20CO01-58	TM2885, TM2887	TM2885, TM2887	TM2892	TM2892
OMC-ST-MW-2D	ETFM0	ETFM0	ETFM0	METFM0	METFG3	20CO01-59	TM2769	TM2769	TM2769	TM2769
OMC-ST-MW-2S	ETFM1	ETFM1	ETFM1	METFM1	METFM1	20CO01-60	TM2769	TM2769	TM2769	TM2769
OMC-ST-MW-3D	ETFM2	ETFK9	ETFK9	METFM2	METFG8	20CO01-61	TM2885, TM2887	TM2885, TM2887	TM2892	TM2892

Table 2. Sample Summary by SDG and Sample ID

Data Usability Evaluation - December 2019

OMC Plant 2 Site (OU4), Waukegan, Illinois

Well ID	CLP Organics			CLP Inorganics			Subcontract MNA			
	CLP #	VOC SDG	PCB SDG	CLP #	Metals SDG	SAS #	Alkalinity, Anions SDG	Sulfide SDG	TOC SDG	Dissolved Gases SDG
OMC-ST-MW-3S	ETFM3	ETFK9	ETFK9	METFM3	METFG8	20CO01-62	TM2885, TM2887	TM2885, TM2887	TM2892	TM2892
OMC-ST-MW-4D	ETFM4	ETFK9	ETFM0	METFM4	METFM1	20CO01-63	TM2885, TM2887	TM2885, TM2887	TM2892	TM2892
OMC-ST-MW-4S	ETFM5	ETFK9	ETFM0	METFM5	METFM1	20CO01-64	TM2885, TM2887	TM2885, TM2887	TM2892	TM2892
OMC-ST-MW-5D	ETFM6	ETFG3	ETFG3	METFM6	METFG3	20CO01-65	TM2769	TM2769	TM2769	TM2769
OMC-ST-MW-5S	ETFM7	ETFG3	ETFG3	METFM7	METFG3	20CO01-66	TM2769	TM2769	TM2769	TM2769
OMC-TB1-120419	ETFN4	ETFM0	-	-	-	-	-	-	-	-
OMC-TB2-120619	ETFN5	ETFK9	-	-	-	-	-	-	-	-
OMC-W-5	ETFL6	ETFG3	ETFG3	METFL6	METFG3	20CO01-55	TM2769	TM2769	TM2769	TM2769
OMC-W-5-R	ETFL7	ETFG3	ETFG3	METFL7	METFG3	20CO01-56	TM2769	TM2769	TM2769	TM2769

CLP = contract laboratory program; SAS# = service analytical sample number; SDG# = sample delivery group; VOC = volatile organic compound; PCB = polychlorinated biphenyls/aroclor; MNA = monitored natural attenuation; TOC = total organic carbon

Subcontract Laboratory Data

Alkalinity, anions (chloride, nitrate, nitrite, sulfate), sulfide, dissolved gases (methane, ethane, ethene), and TOC were analyzed by Katahdin Analytical and reported in SDGs TM2661, TM2804, TM2769, TM2892, TM2885, and TM2887. CH2M performed a level III review on 100 percent of the data set that included validated the data set composed of 63 native samples (4 of which were designated as MS/MSD samples), 7 FD samples, 1 EB, and 1 FB, for a total of 72 field samples.

The data were reviewed to assess their analytical accuracy, precision, and completeness. The review was conducted in accordance with the site-specific QAPP (CH2M 2013). A forms review was conducted on 100 percent of the definitive data.

The forms review consisted of a review of the following QC items:

- Holding times and sample receipt conditions
- Required QC samples at the specified frequencies
- Laboratory control sample precision and accuracy
- MS/MSD precision and accuracy
- Blank contamination and, if any, its impact on the analytical results
- Initial calibration and continuing calibration precision and accuracy
- Laboratory and FD precision
- Method Reporting Limit check precision and accuracy

The QA/QC limits implemented during the data quality evaluation were those listed in the site-specific QAPP. Standard data qualifiers were added as a means of classifying the data as to their conformance to QA/QC requirements. The data qualifiers are defined as follows:

- [J] Estimated. The analyte was below the stated reporting limit (RL), but greater than the method detection limit, or there is an analytical bias.
- [J+] Biased High. The analyte was positively identified, but the associated numerical value is approximate (metals only).
- [J-] Biased Low. The analyte was positively identified, but the associated numerical value is approximate (metals only).
- [U] Undetected. The analyte was analyzed for but not detected at a concentration equal to or greater than the laboratory RL.
- [UJ] Estimated. The component was analyzed for but was not detected at a level equal to or greater than the level of detection. This flag is used when QC measurements indicate a possible low bias in the analytical data.

The analytical results were within project control limits, except where noted in the following sections. Attachment 1 lists the validator applied qualifiers.

Hold Time and Sample Integrity

Generally, the samples were properly preserved and analyzed within standard hold times. Exceptions are outlined as follows:

- Laboratory technicians noted that the vial used for the analysis of sample 20CO01-02 dilution (reported in TM2704) had observable headspace, which could compromise sample integrity.

Methane was the only analyte that was reported out of the diluted analysis. CH2M validators qualified the result as estimated “J”, per professional judgement.

- The vial used for the analysis of sample 20CO01-20 (reported in TM2769) also had headspace. Ethane and ethene were both reported out of this sample, and CH2M validators qualified the results as estimated “J”, per professional judgement. Methane was reported from a diluted sample, which came from a vial without headspace. Therefore, methane required no qualification.
- Dissolved gas samples require preservation to a pH less than 2. Laboratory technicians reported that several samples were found to have a pH greater than 2, including 2 samples in SDG TM2769 (20CO01-41 and 20CO01-45), and 6 samples in SDG TM2892 (20CO01-21, 20CO01-23, 20CO01-28, 20CO01-34, 20CO01-39, and 20CO01-47). As the samples were collected in vials containing preservative, the laboratory assumes that the high pH were likely due to a matrix effect. Though samples were analyzed within the standard hold time, improper preservation may have allowed for microbial conversion or other degradation to the sample. Therefore, CH2M validators used professional judgement to qualify methane, ethane, and ethene, in these samples as estimated “J”.

Due to laboratory error, several samples were analyzed outside twice the standard hold time of 28 days for chloride and/or sulfate. Though analysis of these samples was performed outside of twice the standard hold time, CH2M validators determined per professional judgement that, as chloride and sulfate are generally more stable anions, the sample integrity would not have declined significantly over a few additional days and the data need not be rejected. These samples were instead qualified as estimated: detects “J” and nondetects “UJ” for the following samples:

- In SDG TM2769, 20CO01-45 exceeded hold time for chloride and sulfate, and 20CO01-41 exceeded for chloride only.
- In SDG TM2892, these samples include 20CO01-14, 20CO01-15, and 20CO01-28, which exceeded both chloride and sulfate, and 20CO01-36, which exceeded for chloride only.
- In SDG TM2885/TM2887, these samples include 20CO01-23, 20CO01-25, and 20CO01-39, which exceeded for chloride and sulfate, and 20CO01-27, which exceeded for chloride only.

A shipment of samples was received outside of the 48-hour hold time for nitrate and nitrite analysis. Samples were analyzed immediately upon receipt, though some samples were a few hours past 2 times the standard hold time. CH2M validators determined, per professional judgement, that no samples require rejection. The nitrate and nitrite results reported in SDGs TM2885 and TM2887 exceeded hold time and were qualified as estimated: detects “J” and nondetects “UJ”.

Blank Samples

Blank samples were analyzed at required frequencies, with the following exceptions to accuracy and precision criteria:

Method blanks were analyzed as required, and generally accuracy and precision criteria were met, with the following exceptions:

- In SDG TM2661, alkalinity was detected below the RL in method blank samples WG267688-1 and WG268159-1. Analyte concentrations in the associated samples exceeded 5 times the blank concentrations, no qualification was required.
- In SDG TM2704, methane was detected below the RL in method blank samples WG268083-1, WG268155-1, and WG268483-1. Alkalinity was detected below the RL in method blank sample WG267787-1. TOC was detected below the RL in method blank samples WG268256-1 and WG268257-1.

- Samples 20CO01-05 and 20CO01-33 (associated with WG268083-1), and 20CO01-71 and 20CO01-72 (associated with WG268155-1) had concentrations of methane that were below the RL. These samples were qualified as nondetect “U” and reported to the RL per National Functional Guidelines (NFG) criteria. Methane concentrations in samples associated with blank WG268483-1 were greater than both the RL and 5 times the blank; no qualification was required.
- Alkalinity as detected below the RL in associated samples 20CO01-71 and 20CO01-72; samples were qualified nondetect “U” and reported to the RL per NFG criteria.
- In samples 20CO01-03 and 20CO01-05 (associated with WG268256-1), TOC was detected above the RL, but at concentrations less than 5 times the blank. Samples were qualified nondetect “U” and reported at the original result. Samples 20CO01-08, 20CO01-11, 20CO01-33, 20CO01-44, 20CO01-51, 20CO01-53, and 20CO01-54 (associated with WG268257-1) were detected above the RL, but at concentrations less than 5 times the blank. Samples were qualified nondetect “U” and reported at the original result.
- In SDG TM2769, alkalinity was detected below the reporting limit in samples WG267874-1 and WG268159-1, methane was detected below the RL in method blank samples WG268155-1, WG268264-1, and WG268522-1, and TOC was detected below the reporting limit in method blank samples WG268418-1 and WG268419-1.
 - Alkalinity was detected above the RL at concentrations greater than 5 times the blank in associated samples and no qualification was required.
 - Methane was detected in sample 20CO01-12 (associated with WG268155-1) above the RL, but at a concentration less than 5 times the blank. 20CO01-12 was qualified nondetect “U” and reported at the original result. Methane was detected below the RL in sample 20CO01-13 (associated with WG268155-1) and was therefore qualified nondetect “U” and reported to the RL per NFG criteria.
 - TOC was detected above the RL in sample 20CO01-12 at a concentration less than 5 times the associated blank (WG268418-1); this sample was therefore qualified as nondetect “U” and reported at the original result. TOC was detected above the RL in samples 20CO01-31, 20CO01-60, 20CO01-65, 20CO01-55, and 20CO01-56 at concentrations less than 5 times the associated blank (WG268419-1); therefore, these samples were qualified nondetect “U” and reported at the original results.
- In SDG TM2892, alkalinity was detected below the RL in method blank samples WG268090-1, WG268091-1, WG268159-1, and WG268261-1, methane was detected below the RL in method blanks WG268483-1, WG268522-1, WG268596-1, and WG268679-1, and TOC was detected below the RL in method blanks WG268421-1 and WG268498-1. These analytes were detected above the RL at concentrations greater than 5 times the blank in their associated samples and no qualification was required.
- In SDG TM2885/TM2887, alkalinity was detected below the RL in method blank samples WG268090-1, WG268261-1. As alkalinity was detected above the RL at concentrations greater than 5 times the blank in associated samples, no qualification was required.
- The FB (20CO01-72), included in SDG TM2704 and associated with the samples collected on December 3, 2019, had detected concentrations of alkalinity, methane, and TOC below the RL. Samples associated with this blank are reported in SDG TM2704 and include 20CO01-01, 20CO01-02, 20CO01-03, 20CO01-04, 20CO01-05, 20CO01-06, 20CO01-07, 20CO01-08, 20CO01-09, 20CO01-32, 20CO01-33, 20CO01-43, 20CO01-44, 20CO01-52, 20CO01-53, and 20CO01-54.

- In SDG SM2704, methane was detected above the RL in sample 20CO01-03 at a concentration less than 5 times the blank; the sample was therefore qualified nondetect “U” and reported at the original concentration. Methane was detected below the RL in samples 20CO01-05 and 20CO01-33, which were therefore qualified nondetect “U” and reported to the RL, per NFG criteria. TOC was detected above the RL in 20CO01-05, 20CO01-33, 20CO01-53, and 20CO01-54, but at concentrations less than 5 times the blank; therefore, these samples were qualified nondetect “U” and reported at the original sample concentration. Alkalinity concentrations in associated samples exceeded 5 times the blank and required no qualification.
- The EB (20CO01-71), included in SDG SM2704, had concentrations of alkalinity, methane, and TOC detected below the RL. The samples collected during this field event are associated with this blank.
 - In SDG TM2704, methane was detected above the RL in sample 20CO01-03, and below the RL in samples 20CO01-05 and 20CO01-33. Though methane in 20CO01-03 was above the RL, it did not exceed 5 times the blank and was therefore qualified nondetect “U” and reported at the original concentration. Samples 20CO01-05 and 20CO01-33 were qualified nondetect “U” and reported to the RL, per NFG criteria. TOC was detected above the RL in 20CO01-05, 20CO01-11, 20CO01-33, 20CO01-53, and 20CO01-54, but at concentrations that did not exceed 5 times the blank; therefore, these samples were qualified nondetect “U” and reported at the original sample concentration. Alkalinity concentrations exceeded 5 times the blank for associated samples and required no qualification.
 - In SDG TM2769, methane was detected above the RL in samples 20CO01-12 and 20CO01-60, but at concentrations that did not exceed 5 times the blank. These samples were qualified nondetect “U” and reported at their original concentrations. Methane was detected below the RL in sample 20CO01-13 and was qualified nondetect “U” and reported at the RL per NFG criteria.

Matrix Spike/Matrix Spike Duplicate

Matrix spikes and matrix spike duplicates were analyzed at the appropriate frequency of 1 per 20 samples, and generally accuracy and precision criteria were met, with the following exceptions:

- Due to laboratory error, chloride was not analyzed for in samples 20CO01-01 MS and MSD (reported in SDG TM2661), for which extra sample volume was provided by field teams. However, MS were performed on other project samples selected by the laboratory for chloride, meeting the required frequency of 1 MS per 20 samples. No further action was required.
- In SDG TM2661, percent recovery (%R) for sulfate was below the lower control limit in MS samples 20CO01-10 MS and 20CO01-17 MS. These recoveries were within NFG criteria but exceeded laboratory criteria. CH2M validators chose to qualify the results based on the more conservative laboratory criteria. Sulfate was nondetect in parent sample 20CO01-10 and detected above the RL in parent sample 20CO01-17, and was qualified as estimated/estimated biased low; “UJ” and “J-” respectively.
- In SDG TM2704, %R for methane could not be calculated for the MS and MSD samples associated with parent samples 20CO01-10 and 20CO01-17. As methane concentrations in the parent samples exceeded 4 times the spike, CH2M validators determined that no qualification was necessary.
- In SDG TM2704, nitrite exceeded the lower control limit (LCL) for %R in sample 20CO01-01 MS. Nitrite was detected in parent sample 20CO01-01 and was therefore qualified as estimated biased low “J-”.

- In SDG TM2769, %R for chloride was below the LCL in the MS of sample 20CO01-59, and %R for methane and nitrate was below the LCL in both the MS and MSD. Chloride, detected above the RL in the parent sample, was qualified as estimated biased low “J-”; nitrate, which was nondetect in the parent, was qualified as estimated “UJ”. CH2M validators determined that no qualification was required for methane as the original parent sample concentration exceeded 4 times the blank.
- In SDG TM2769, sulfate fell below the LCL for %R in sample 20CO01-60 MS and exceeded the relative percent difference (RPD) criteria between the MS and MSD. Sulfate was detected in parent sample 20CO01-60 and was therefore qualified as estimated biased low “J-”.
- In SDG TM2892, chloride exceeded the LCL for %R in samples 20CO01-47 MS and 20CO01-48 MS, and sulfate exceeded the LCL for %R in 20CO01-48. As the original sulfate concentration in parent 20CO01-48 exceeded 4 times the spike, no qualification was required. Chloride was detected in both parent samples 20CO01-47 and 20CO01-48 and was therefore qualified as estimated biased low “J-”.
- In SDG TM2885, TM2887, nitrate and nitrite exceeded the LCL for %R, and was less than 30 percent in sample 20CO01-21 MS. In the narrative, the laboratory believes the sample was incorrectly spiked. However, as there was MSD analyzed to provide a comparison, samples were flagged following NFG criteria. Nitrate was nondetect in parent sample 20CO01-21 and was rejected “R”. Nitrite was detected below the RL and was qualified as estimated biased low “J-”.

Field Duplicates

A total of 7 FD samples were collected for analysis, meeting the minimum frequency of 1 per 10 field samples. FD samples were collected immediately following the parent sample and analyzed for the same parameters. The precision criteria, an RPD of less than 30 percent, was met, with the following exceptions:

- In SDG TM2769, RPD for methane exceeded criteria in parent sample 20CO01-55 and FD sample 20CO01-56. Methane was detected in both parent and FD and was therefore qualified as estimated “J”.
- In SDG TM2892, RPD for alkalinity, ethene, and methane exceeded criteria in parent sample 20CO01-48 and FD sample 20CO01-49. These analytes were detected in both parent and duplicate and were therefore qualified as estimated “J”.

Contract Laboratory Program Data

The samples were analyzed for VOCs by a laboratory in EPA’s CLP. EPA’s Environmental Service Assistance Team (ESAT) contractor, TechLaw, reviewed the data set from the laboratory to assess the accuracy and precision of the method and the matrix using criteria established in the NFG (EPA 2017) and verified that the data set was complete. ESAT validators also added data qualifiers when the QC statistics indicated a possible bias to specific compounds or analytes associated with a particular method and sample batch.

Standard data qualifiers are a means to classify the data with regard to their conformance to QC requirements. The applied data qualifiers are defined as follows:

- [U] The analyte was analyzed for but was not detected above the reported sample quantitation limit.
- [J] The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
- [J+] The result is an estimated quantity; the results may be biased high.
- [J-] The result is an estimated quantity; the results may be biased low.

- [UJ] The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the action limit of quantitation necessary to accurately and to precisely measure the analyte in the sample.
- [R] The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.

CH2M reviewed the validation performed by Techlaw for the groundwater samples in Case Number 48662; SDG numbers ETFF5, ETFG3, ETK9, ETFM0, and ETFM1 are associated with VOC and PCB Aroclor analysis, and SDG numbers METFF2, METFG3, METFG8, and METFM1 are associated with dissolved metals. The VOC and dissolved metals data set includes 63 native samples (of which 4 were designated MS/MSD samples), 7 FD samples, 1 FB, and 1 EB, and 2 VOC TBs, for a total of 74 and 72 field samples, respectively. The PCB Aroclor data set included 22 native samples (2 of which were designated as MS/MSD samples), 2 FDs, 1 FD, and 1 EB, for a total of 26 samples.

The EPA validation case narrative worksheets indicate that some sample results should be qualified as estimated based on the applicable QC statistics or other NFG requirements. Attachment 1 lists the CH2M validator applied qualifiers. Attachment 2 contains the ESAT narratives and worksheets.

Validation of Field Quality Control Samples

EPA's ESAT validators, Techlaw, reviewed field QC samples, including field and EB samples, and FDs, but did not qualify results. CH2M validators reviewed the aforementioned field QC samples and VOC TB samples in accordance with the QAPP. QC criteria were generally met, except where outlined in the following subsections.

Blanks

Blank samples were analyzed at required frequencies, including 1 EB, 1 FB, and 2 TBs. Exceptions to accuracy and precision criteria are outlined as follows:

- In FB ETFN3 (reported in SDG ETFF5), acetone, 2-butanone, and toluene were detected below the RL. This blank is associated with all samples collected December 3, 2019. Associated samples in SDG ETFF5 include ETFF2, ETFF3, ETFF4, ETFF7, ETFF8, ETFF9, ETFJ3, ETFJ4, ETFL1, ETFL2, and ETFL3. Associated samples in SDG ETFG3 include ETK4 and ETK5.
 - In SDG ETFF5, acetone and 2-butanone were nondetect in the associated samples, and no qualification was required. Toluene was detected above the RL in sample ETFG1, but at a concentration less than 5 times the blank; therefore, the sample was qualified nondetect "U" and reported at the original concentration. The other associated samples were nondetect for toluene and no qualification was required.
 - The associated samples in SDG ETFG3 were nondetect for acetone, 2-butanone, and toluene and therefore required no qualification.
- In EB ETFN2 (reported in SDG ETFF5), 2-butanone and toluene were detected below the RL, and acetone was detected above the RL. This blank is associated with the samples in the data set.
 - In SDG ETFF5, acetone and 2-butanone were nondetect in the associated samples, and no qualification was required. Toluene was detected above the RL in sample ETFG1, but at a concentration less than 5 times the blank; therefore, the sample was qualified nondetect "U" and reported at the original concentration. The other associated samples were nondetect for toluene and no qualification was required.
 - In SDG ETFG3, acetone and 2-butanone were detected above the RL in samples ETK2 and ETK6, but at concentrations less than 5 times the blank; therefore, these samples were

qualified nondetect “U” and reported at the original sample concentration. Toluene was nondetect in the samples and required no qualification.

- The samples in SDG ETKF9 and ETFM0 were nondetect for acetone, 2-butanone, and toluene and required no qualification.
- In SDG ETFM1, acetone was detected below the RL in samples ETFG5 and ETKF8, and above the RL in samples ETFH2, ETFH9, and ETFJ5. ETFG5 and ETKF8 were qualified nondetect “U” and reported to the RL per NFG criteria. Though ETFH2, ETFH9, and ETFJ5 were detected above the RL, concentrations did not exceed 5 times the blank; samples were therefore qualified nondetect “U” and reported at the original sample concentration. 2-butanone was detected below the RL in samples ETFG5, ETFH4, and ETKF8, and above the RL in samples ETFH9 and ETFJ5. Concentrations of 2-butanone in ETFH9 and ETFJ5 were greater than 5 times the blank, and no qualification was required. Samples ETFG5 and ETKF8 were qualified nondetect “U” and reported to the RL per NFG criteria. ETFH4 was a diluted sample, and though 2-butanone was technically detected below the RL, the result was significantly greater than 5 times the blank. CH2M validators determined that this detection was not affected by the low-level blank contamination and no qualification was applied. Toluene was nondetect in the associated samples and no qualification was required.

Field Duplicate Samples

A total of 4 FD samples were collected for VOC and dissolved metals analysis, and 2 analyzed for PCB aroclor analysis, meeting the minimum frequency of 1 per 10 field samples. FD samples were collected immediately following the parent sample and analyzed for the same parameters. The precision criteria, an RPD of less than 30 percent, was met for the analytes and no qualification was required.

Findings

The following subsections summarize the data validation findings and usability of the final report table results. The sample numbers and locations do not include QA/QC samples.

Volatile Organic Compound Data

The VOC data set consists of the results for 51 analytes for each of the 63 monitoring well samples, excluding QA/QC samples, for a total of 3,213 results.

The data validation summary indicates the following:

- J, J+, U and UJ qualifiers were applied to sample results that were potentially affected by QC deficiencies.
- J qualifiers were applied to sample results that were reported between the method detection limit and the RL.
- Nondetected sample results were qualified U.
- None of the reported VOC data was rejected.

Though the evaluation of blanks and other QA/QC data indicates possible estimate values, the accuracy and precision are generally acceptable, and the data set completeness is deemed as 100 percent usable and may be used in the project decision-making process with qualification.

Polychlorinated Biphenyl Aroclor Data

The PCB aroclor data set consists of the results for 9 aroclors for 21 monitoring well samples, excluding QA/QC samples, creating 180 results.

The validation of the PCB aroclor data indicates the following:

- J, J+, and U qualifiers were applied to sample results that were potentially affected by QC deficiencies.
- J qualifiers were applied to sample results that were reported between the method detection limit and the RL.
- Nondetected sample results were qualified U.
- None of the reported PCB aroclor data was rejected.

Though the evaluation of QA/QC data indicates possible estimate values, the accuracy and precision are generally acceptable, and the data set completeness is deemed as 100 percent usable and may be used in the project decision-making process with qualification.

Dissolved Metals Data

The metals data set consists of the results for 3 analytes for each of the 63 monitoring well sample, excluding QA/QC samples, for a total of 189 results. The validation summary of the metals data set indicates the following:

- J and U qualifiers were applied to sample results that were potentially affected by QC deficiencies.
- J qualifiers were applied to sample results that were reported between the method detection limit and the RL.
- Nondetected sample results were qualified U.
- None of the reported dissolved metals data was rejected.

Though the evaluation of QA/QC data indicates possible estimate values, the accuracy and precision are generally acceptable, and the data set completeness is deemed as 100 percent usable and may be used in the project decision-making process with qualification.

Alkalinity Data

The alkalinity data set consists of 63 results, excluding QA/QC. The validation summary of the alkalinity data indicates the following:

- J and U qualifiers were applied to sample results that were potentially affected by QC deficiencies.
- J qualifiers were applied to sample results that were reported between the method detection limit and the RL.
- Nondetected sample results were qualified U.
- None of the reported alkalinity data was rejected.

Though the evaluation of blanks and other QA/QC data indicates possible estimate values, the accuracy and precision are generally acceptable, and the data set completeness is deemed as 100 percent usable and may be used in the project decision-making process with qualification.

Anions Data

The anions data set includes chloride, nitrate, nitrite, and sulfate for 63 monitoring well samples, excluding QA/QC samples, for a total of 252 results. The validation summary of the anions data indicates the following:

- J, J-, and UJ qualifiers were applied to sample results that were potentially affected by QC deficiencies.
- R qualifiers were applied to sample results that were rejected.
- J qualifiers were applied to sample results that were reported between the method detection limit and the RL.
- Nondetected sample results were qualified U.
- One nitrate result was rejected due to poor matrix spike recovery.
- Several samples were analyzed outside of hold time, including the nitrate and nitrite samples in SDG TM2885/TM2887, but no samples were rejected for this exceedance. Detects were qualified as estimated “J” and nondetects qualified “UJ”.

For anions, 99 percent of the data, as qualified, can be used to make project decisions.

Sulfide Data

The sulfide data set consists of 63 results, excluding QA/QC samples. The validation of the sulfide data indicates the following:

- There was no indication of QA/QC deficiencies, and no additional qualification was needed.
- J qualifiers were applied to sample results that were reported between the method detection limit and the RL.
- Nondetected sample results were qualified U.
- None of the sulfide data was rejected.

For sulfide, 100 percent of the data, as qualified, can be used to make project decisions.

Dissolved Gases Data

The dissolved gases data set includes methane, ethane, and ethene for 63 monitoring well samples, excluding QA/QC samples, for a total of 189 results. The validation of the dissolved gases data indicates the following:

- J and U qualifiers were applied to sample results that were potentially affected by QC deficiencies.
- The evaluation of blanks data indicates possible bias due to applicable QC statistics. U qualifiers were applied to sample results potentially affected by QC deficiencies.
- J qualifiers were applied to sample results that were reported between the method detection limit and the RL.
- Nondetected sample results were qualified U.
- Several samples were found to be improperly preserved at time of analysis with pH greater than 2, which is suspected to be a result of matrix effect and not improper preservation in the field. Other samples were found to have significant headspace in the sample vials. As sample integrity could have been affected by either of these deficiencies, these samples were qualified as estimated J per professional judgment.
- None of the dissolved gases data was rejected.

Though the evaluation of blanks and other QA/QC data indicates possible estimate values, the accuracy and precision are generally acceptable, and the data set completeness is deemed as 100 percent usable and may be used in the project decision-making process with qualification.

Total Organic Carbon Data

TOC data set consists of 63 results, excluding QA/QC samples. The validation summary of the TOC data indicates the following:

- The evaluation of blanks data indicates possible bias due to applicable QC statistics. U qualifiers were applied to sample results potentially affected by QC deficiencies.
- J qualifiers were applied to sample results that were reported between the method detection limit and the RL.
- Nondetected sample results were qualified U.
- None of the reported TOC results were rejected.

For TOC, 100 percent of the data, as qualified, can be used to make project decisions.

Overall Assessment

The final activity in the data quality evaluation is an assessment of whether the data meet the data quality objectives. The goal of the assessment was to demonstrate that a sufficient number of representative samples were collected, and the resulting analytical data can be used to support the decision-making process. The following summary highlights the data evaluation findings for the above-defined events:

- The precision and accuracy of the data, as measured by field and laboratory QC indicators, indicate that the data quality objectives were met.
- Some anions samples were analyzed outside of hold time. No data were rejected for this QC deficiency, but one nitrate result was rejected for extremely low matrix spike recovery. Ninety-nine percent of anions data can be considered usable as qualified.
- The integrity of dissolved gases results for some samples could have been affected by improper preservation (pH greater than 2) or significant headspace in the vials. No data was rejected due to these deficiencies, but results are qualified as estimated. 100 percent of the data can be considered usable as qualified.
- The completeness objective of 90 percent was met for all method/analyte combinations.

References

CH2M HILL, Inc. (CH2M). 2013. *Quality Assurance Project Plan, Revision 2, OMC Plant 2 Site, Waukegan, Illinois*. WA No. 105-RARA-0528, Contract No. EP-S5-06-01. March.

CH2M HILL, Inc. (CH2M). 2017. *Quality Assurance Project Plan Addendum II Letter, OMC Plant 2 Site, Waukegan, Illinois*. WA No. 237-RARA-528, Contract No. EP-S5-06-01. October.

CH2M HILL, Inc. (CH2M). 2019. *Quality Assurance Project Plan Addendum III Letter, OMC Plant 2 Site, Waukegan, Illinois*. WA No. 237-RARA-528, Contract No. EP-S5-06-01. February.

U.S. Environmental Protection Agency (EPA). 2016. *National Functional Guidelines for Superfund Organic Methods Data Review*. EPA-540-R-2016-002. September.

Attachment 1

Qualification Summary

Attachment 1. Qualification Summary

Data Usability Evaluation - December 2019

OMC Plant 2 Site (OU4), Waukegan, Illinois

Sample Name	CLP/SAS#	SDG	CAS #	Analyte	Initial Result	Laboratory		CH2M		Units	CH2M Reason Code
						Qualification	Final Result	Validator	Qualification		
OMC-MW-11D	20CO01-01	TM2704	14797-65-0	Nitrite	0.11		0.11	J-		mg/L	MS<LCL
OMC-MW-11D-R	20CO01-02	TM2704	74-82-8	Methane	2800	B	2800	J		µg/L	Preservation
OMC-MW-11S	20CO01-03	TM2704	74-82-8	Methane	17	B	17	U		µg/L	EB, FB
OMC-MW-11S	20CO01-03	TM2704	TOC	Total Organic Carbon	2.9		2.9	U		mg/L	MB
OMC-MW-3S	20CO01-05	TM2704	74-82-8	Methane	5.2	JB	10	U		µg/L	EB, FB, MB
OMC-MW-3S	20CO01-05	TM2704	TOC	Total Organic Carbon	1.5		1.5	U		mg/L	EB, FB, MB
OMC-MW-513D	20CO01-08	TM2704	TOC	Total Organic Carbon	3.1		3.1	U		mg/L	MB
OMC-MW-516D	20CO01-10	TM2661	14808-79-8	Sulfate	10	U	10	UJ		mg/L	MS<LCL
OMC-MW-516D	ETFG1	ETFF5	108-88-3	Toluene	5.1		5.1	U		µg/L	EB, FB
OMC-MW-516S	20CO01-11	TM2704	TOC	Total Organic Carbon	1.6		1.6	U		mg/L	EB, MB
OMC-MW-528D	20CO01-12	TM2769	74-82-8	Methane	11	B	11	U		µg/L	EB, MB
OMC-MW-528D	20CO01-12	TM2769	TOC	Total Organic Carbon	2.4		2.4	U		mg/L	MB
OMC-MW-528S	20CO01-13	TM2769	74-82-8	Methane	4.2	JB	10	U		µg/L	EB, MB
OMC-MW-600D	20CO01-14	TM2892	16887-00-6	Chloride	240		240	J		mg/L	HT
OMC-MW-600D	20CO01-14	TM2892	14808-79-8	Sulfate	3.5		3.5	J		mg/L	HT
OMC-MW-600D	ETFG5	ETFM1	78-93-3	2-Butanone	7.9	J	10	U		µg/L	EB
OMC-MW-600D	ETFG5	ETFM1	67-64-1	Acetone	6.7	J	10	U		µg/L	EB
OMC-MW-600S	20CO01-15	TM2892	16887-00-6	Chloride	44		44	J		mg/L	HT
OMC-MW-600S	20CO01-15	TM2892	14808-79-8	Sulfate	120		120	J		mg/L	HT
OMC-MW-601S	20CO01-17	TM2661	14808-79-8	Sulfate	63		63	J-		mg/L	MS<LCL
OMC-MW-602S	20CO01-20	TM2769	74-84-0	Ethane	100		100	J		µg/L	Preservation
OMC-MW-603D	20CO01-21	TM2892	74-84-0	Ethane	310		310	J		µg/L	Preservation
OMC-MW-603D	20CO01-21	TM2892	74-85-1	Ethene	5000		5000	J		µg/L	Preservation
OMC-MW-603D	20CO01-21	TM2892	74-82-8	Methane	21000	B	21000	J		µg/L	Preservation
OMC-MW-603D	20CO01-21	TM2885/TM2887	14797-55-8	Nitrate	0.05	U	0.05	R		mg/L	HT, MS<30%
OMC-MW-603D	20CO01-21	TM2885/TM2887	14797-65-0	Nitrite	0.012	J	0.012	J-		mg/L	HT, MS<30%
OMC-MW-603D	ETFH2	ETFM1	67-64-1	Acetone	16		16	U		µg/L	EB
OMC-MW-603S	20CO01-22	TM2885/TM2887	14797-55-8	Nitrate	0.05	U	0.05	UJ		mg/L	HT
OMC-MW-604D	20CO01-23	TM2885/TM2887	16887-00-6	Chloride	220		220	J		mg/L	HT
OMC-MW-604D	20CO01-23	TM2892	74-84-0	Ethane	3000		3000	J		µg/L	Preservation
OMC-MW-604D	20CO01-23	TM2892	74-85-1	Ethene	700		700	J		µg/L	Preservation
OMC-MW-604D	20CO01-23	TM2892	74-82-8	Methane	18000	B	18000	J		µg/L	Preservation

Attachment 1. Qualification Summary

Data Usability Evaluation - December 2019

OMC Plant 2 Site (OU4), Waukegan, Illinois

Sample Name	CLP/SAS#	SDG	CAS #	Analyte	Initial Result	Laboratory		Final Result	CH2M		CH2M Reason Code
						Qualification			Validator	Units	
OMC-MW-604D	20CO01-23	TM2885/TM2887	14797-55-8	Nitrate	0.1	U		0.1	UJ	mg/L	HT
OMC-MW-604D	20CO01-23	TM2885/TM2887	14808-79-8	Sulfate	20	U		20	UJ	mg/L	HT
OMC-MW-604S	20CO01-24	TM2885/TM2887	14797-55-8	Nitrate	0.05	U		0.05	UJ	mg/L	HT
OMC-MW-604S	20CO01-24	TM2885/TM2887	14797-65-0	Nitrite	0.05	U		0.05	UJ	mg/L	HT
OMC-MW-605D	20CO01-25	TM2885/TM2887	16887-00-6	Chloride	350			350	J	mg/L	HT
OMC-MW-605D	20CO01-25	TM2885/TM2887	14797-55-8	Nitrate	0.05	U		0.05	UJ	mg/L	HT
OMC-MW-605D	20CO01-25	TM2885/TM2887	14797-65-0	Nitrite	0.055			0.055	J	mg/L	HT
OMC-MW-605D	20CO01-25	TM2885/TM2887	14808-79-8	Sulfate	240			240	J	mg/L	HT
OMC-MW-605D-R	20CO01-26	TM2885/TM2887	14797-55-8	Nitrate	0.05	U		0.05	UJ	mg/L	HT
OMC-MW-605S	20CO01-27	TM2885/TM2887	16887-00-6	Chloride	35			35	J	mg/L	HT
OMC-MW-605S	20CO01-27	TM2885/TM2887	14797-55-8	Nitrate	0.05	U		0.05	UJ	mg/L	HT
OMC-MW-605S	20CO01-27	TM2885/TM2887	14797-65-0	Nitrite	0.05	U		0.05	UJ	mg/L	HT
OMC-MW-606D	20CO01-28	TM2892	16887-00-6	Chloride	200			200	J	mg/L	HT
OMC-MW-606D	20CO01-28	TM2892	74-84-0	Ethane	280			280	J	µg/L	Preservation
OMC-MW-606D	20CO01-28	TM2892	74-85-1	Ethene	21000			21000	J	µg/L	Preservation
OMC-MW-606D	20CO01-28	TM2892	74-82-8	Methane	17000	B		17000	J	µg/L	Preservation
OMC-MW-606D	ETFH9	ETFM1	67-64-1	Acetone	40			40	U	µg/L	EB
OMC-MW-607S	20CO01-31	TM2769	TOC	Total Organic Carbon	2.7			2.7	U	mg/L	MB
OMC-MW-610S	20CO01-33	TM2704	74-82-8	Methane	5.5	JB		10	U	µg/L	EB, FB, MB
OMC-MW-610S	20CO01-33	TM2704	TOC	Total Organic Carbon	2.1			2.1	U	mg/L	EB, FB, MB
OMC-MW-612D	20CO01-34	TM2892	74-84-0	Ethane	12			12	J	µg/L	Preservation
OMC-MW-612D	20CO01-34	TM2892	74-85-1	Ethene	5300			5300	J	µg/L	Preservation
OMC-MW-612D	20CO01-34	TM2892	74-82-8	Methane	7300	B		7300	J	µg/L	Preservation
OMC-MW-612D	ETFJ5	ETFM1	67-64-1	Acetone	55			55	U	µg/L	EB
OMC-MW-613D	20CO01-37	TM2885/TM2887	14797-55-8	Nitrate	0.05	U		0.05	UJ	mg/L	HT
OMC-MW-613D	20CO01-37	TM2885/TM2887	14797-65-0	Nitrite	0.05	U		0.05	UJ	mg/L	HT
OMC-MW-613S	20CO01-38	TM2885/TM2887	14797-65-0	Nitrite	0.05	U		0.05	UJ	mg/L	HT
OMC-MW-614D	20CO01-39	TM2885/TM2887	16887-00-6	Chloride	430			430	J	mg/L	HT
OMC-MW-614D	20CO01-39	TM2892	74-84-0	Ethane	140			140	J	µg/L	Preservation
OMC-MW-614D	20CO01-39	TM2892	74-85-1	Ethene	25000			25000	J	µg/L	Preservation
OMC-MW-614D	20CO01-39	TM2892	74-82-8	Methane	16000	B		16000	J	µg/L	Preservation
OMC-MW-614D	20CO01-39	TM2885/TM2887	14797-55-8	Nitrate	0.05	U		0.05	UJ	mg/L	HT

Attachment 1. Qualification Summary

Data Usability Evaluation - December 2019

OMC Plant 2 Site (OU4), Waukegan, Illinois

Sample Name	CLP/SAS#	SDG	CAS #	Analyte	Initial Result	Laboratory		CH2M		Units	CH2M Reason Code
						Qualification	Final Result	Validator	Qualification		
OMC-MW-614D	20CO01-39	TM2885/TM2887	14797-65-0	Nitrite	0.05	U	0.05	UJ		mg/L	HT
OMC-MW-614D	20CO01-39	TM2885/TM2887	14808-79-8	Sulfate	330		330	J		mg/L	HT
OMC-MW-614S	20CO01-40	TM2885/TM2887	14797-55-8	Nitrate	0.05	U	0.05	UJ		mg/L	HT
OMC-MW-614S	20CO01-40	TM2885/TM2887	14797-65-0	Nitrite	0.05	U	0.05	UJ		mg/L	HT
OMC-MW-615D	20CO01-41	TM2769	16887-00-6	Chloride	880		880	J		mg/L	HT
OMC-MW-615D	20CO01-41	TM2769	74-84-0	Ethane	43		43	J		µg/L	Preservation
OMC-MW-615D	20CO01-41	TM2769	74-85-1	Ethene	2000		2000	J		µg/L	Preservation
OMC-MW-615D	20CO01-41	TM2769	74-82-8	Methane	23000	B	23000	J		µg/L	Preservation
OMC-MW-615D	ETFK2	ETFG3	78-93-3	2-Butanone	12		12	U		µg/L	EB
OMC-MW-615D	ETFK2	ETFG3	67-64-1	Acetone	14	J	14	U		µg/L	EB
OMC-MW-619S	20CO01-44	TM2704	TOC	Total Organic Carbon	2.6		2.6	U		mg/L	MB
OMC-MW-620D	20CO01-45	TM2769	16887-00-6	Chloride	92		92	J		mg/L	HT
OMC-MW-620D	20CO01-45	TM2769	74-84-0	Ethane	30		30	J		µg/L	Preservation
OMC-MW-620D	20CO01-45	TM2769	74-85-1	Ethene	210		210	J		µg/L	Preservation
OMC-MW-620D	20CO01-45	TM2769	74-82-8	Methane	21000	B	21000	J		µg/L	Preservation
OMC-MW-620D	20CO01-45	TM2769	14808-79-8	Sulfate	180		180	J		mg/L	HT
OMC-MW-620D	ETFK6	ETFG3	78-93-3	2-Butanone	20		20	U		µg/L	EB
OMC-MW-620D	ETFK6	ETFG3	67-64-1	Acetone	11	J	11	U		µg/L	EB
OMC-MW-621D	20CO01-47	TM2892	16887-00-6	Chloride	500		500	J-		mg/L	HT, MS<LCL
OMC-MW-621D	20CO01-47	TM2892	74-84-0	Ethane	48		48	J		µg/L	Preservation
OMC-MW-621D	20CO01-47	TM2892	74-85-1	Ethene	1200		1200	J		µg/L	Preservation
OMC-MW-621D	20CO01-47	TM2892	74-82-8	Methane	25000	B	25000	J		µg/L	Preservation
OMC-MW-621D	ETFK8	ETFM1	78-93-3	2-Butanone	9	J	10	U		µg/L	EB
OMC-MW-621D	ETFK8	ETFM1	67-64-1	Acetone	6.2	J	10	U		µg/L	EB
OMC-MW-621S	20CO01-48	TM2892	ALK	Alkalinity	100		100	J		mg/L	FD>RPD
OMC-MW-621S	20CO01-48	TM2892	16887-00-6	Chloride	170		170	J-		mg/L	MS<LCL
OMC-MW-621S	20CO01-48	TM2892	74-85-1	Ethene	55		55	J		µg/L	FD>RPD
OMC-MW-621S	20CO01-48	TM2892	74-82-8	Methane	2100	B	2100	J		µg/L	FD>RPD
OMC-MW-621S-R	20CO01-49	TM2892	ALK	Alkalinity	140		140	J		mg/L	FD>RPD
OMC-MW-621S-R	20CO01-49	TM2892	74-85-1	Ethene	21		21	J		µg/L	FD>RPD
OMC-MW-621S-R	20CO01-49	TM2892	74-82-8	Methane	1200	B	1200	J		µg/L	FD>RPD
OMC-MW-623S	20CO01-51	TM2704	TOC	Total Organic Carbon	2.7		2.7	U		mg/L	MB

Attachment 1. Qualification Summary

Data Usability Evaluation - December 2019

OMC Plant 2 Site (OU4), Waukegan, Illinois

Sample Name	CLP/SAS#	SDG	CAS #	Analyte	Initial Result	Laboratory		CH2M		Units	CH2M Reason Code
						Qualification	Final Result	Validator	Qualification		
OMC-MW-624S	20CO01-53	TM2704	TOC	Total Organic Carbon	1.7		1.7	U		mg/L	EB, FB, MB
OMC-MW-624S-R	20CO01-54	TM2704	TOC	Total Organic Carbon	1.6		1.6	U		mg/L	EB, FB, MB
OMC-MW-625D	20CO01-67	TM2885/TM2887	14797-55-8	Nitrate	0.14		0.14	J		mg/L	HT
OMC-MW-625D	20CO01-67	TM2885/TM2887	14797-65-0	Nitrite	0.05	U	0.05	UJ		mg/L	HT
OMC-MW-625S	20CO01-68	TM2885/TM2887	14797-55-8	Nitrate	0.05	U	0.05	UJ		mg/L	HT
OMC-MW-625S	20CO01-68	TM2885/TM2887	14797-65-0	Nitrite	0.05	U	0.05	UJ		mg/L	HT
OMC-MW-ST-2D	20CO01-59	TM2769	16887-00-6	Chloride	130		130	J-		mg/L	MS<LCL
OMC-MW-ST-2D	20CO01-59	TM2769	14797-55-8	Nitrate	0.05	U	0.05	UJ		mg/L	MS/MSD<LCL
OMC-ST-MW-1D	20CO01-57	TM2885/TM2887	14797-55-8	Nitrate	0.05	U	0.05	UJ		mg/L	HT
OMC-ST-MW-1S	20CO01-58	TM2885/TM2887	14797-65-0	Nitrite	0.05	U	0.05	UJ		mg/L	HT
OMC-ST-MW-2S	20CO01-60	TM2769	74-82-8	Methane	15	B	15	U		µg/L	EB, Report at result
OMC-ST-MW-2S	20CO01-60	TM2769	14808-79-8	Sulfate	100		100	J-		mg/L	MS<LCL, RPD
OMC-ST-MW-2S	20CO01-60	TM2769	TOC	Total Organic Carbon	4		4	U		mg/L	MB
OMC-ST-MW-3D	20CO01-61	TM2885/TM2887	14797-65-0	Nitrite	0.05	U	0.05	UJ		mg/L	HT
OMC-ST-MW-3S	20CO01-62	TM2885/TM2887	14797-55-8	Nitrate	0.05	U	0.05	UJ		mg/L	HT
OMC-ST-MW-3S	20CO01-62	TM2885/TM2887	14797-65-0	Nitrite	0.05	U	0.05	UJ		mg/L	HT
OMC-ST-MW-4D	20CO01-63	TM2885/TM2887	14797-55-8	Nitrate	1.1		1.1	J		mg/L	HT
OMC-ST-MW-4D	20CO01-63	TM2885/TM2887	14797-65-0	Nitrite	0.05	U	0.05	UJ		mg/L	HT
OMC-ST-MW-4S	20CO01-64	TM2885/TM2887	14797-55-8	Nitrate	0.05	U	0.05	UJ		mg/L	HT
OMC-ST-MW-4S	20CO01-64	TM2885/TM2887	14797-65-0	Nitrite	0.05	U	0.05	UJ		mg/L	HT
OMC-ST-MW-5D	20CO01-65	TM2769	TOC	Total Organic Carbon	4.8		4.8	U		mg/L	MB
OMC-W-5	20CO01-55	TM2769	74-82-8	Methane	74	B	74	J		µg/L	FD>RPD
OMC-W-5	20CO01-55	TM2769	TOC	Total Organic Carbon	3.9		3.9	U		mg/L	MB
OMC-W-5-R	20CO01-56	TM2769	74-82-8	Methane	53	B	53	J		µg/L	FD>RPD
OMC-W-5-R	20CO01-56	TM2769	TOC	Total Organic Carbon	3.9		3.9	U		mg/L	MB
OMC-FB-120319	20CO01-71	TM2704	ALK	Alkalinity	1.9	J	5	U		mg/L	MB
OMC-FB-120319	20CO01-71	TM2704	74-82-8	Methane	4.3	JB	10	U		µg/L	MB
OMC-FB-120319	20CO01-72	TM2704	ALK	Alkalinity	1.8	J	5	U		mg/L	MB
OMC-FB-120319	20CO01-72	TM2704	74-82-8	Methane	3.8	JB	10	U		µg/L	MB

EB = equipment blank; FB = Field Blank; MB = method blank; HT= hold time; FD = field duplicate; MS = matrix spike; MSD = matrix spike duplicate; RPD = relative percent difference;

LCL = lower control limit

Attachment 2

ESAT Validation Narratives

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V
SUPERFUND DIVISION

DATE:

SUBJECT: Review of Data
Received for Review on: December 26, 2019

FROM: Timothy Prendiville, Supervisor (SR-6J)
Science and Quality Assurance Section

TO: Data User: Jacobs
Email address: kaitlin.ma@jacobs.com

Electronic and Manual Validation for Region 5

We have reviewed the data for the following case:

Site Name: Outboard Marine Corp. (IL)

Case No: 48662 MA No: N/A SDG No: ETFG3

Number and Type of Samples: 20 waters (20 low level VOA, 4 Aroclors)

Sample Numbers: ETFG3, G4, G7 - G9, H0, H1, J1, J2, K2 - K7, L6, L7, M6, M7, N0

Laboratory: Shealy Environmental Services, Inc. Hours for Review: _____

Following are our findings:

CC: Howard Pham
Region 5 ESAT Contracting Officer's Representative
Mail Code: SA-5J

Case No: 48662
Site Name: Outboard Marine Corp. (IL)

Page 2 of 7
SDG No: ETFG3
Laboratory: Shealy

Below is a summary of the out-of-control audits and the possible effects on the data for this case:

Twenty (20) samples; ETFG3, ETFG4, ETFG7 - ETFG9, ETFH0, ETFH1, ETFJ1, ETFJ2, ETFK2 - ETFK7, ETFL6, ETFL7, ETFM6, ETFM7 and ETFN0 were shipped to Shealy Environmental Services (EQI) located in West Columbia, SC. The samples were collected on December 2nd through December 4th, 2019. All samples were received on December 5th, 2019 intact and properly cooled.

Sixteen (16) samples; ETFG3, ETFG4, ETFG7 - ETFG9, ETFH0, ETFH1, ETFJ1, ETFJ2, ETFK2 - ETFK7 and ETFN0, were analyzed for only the low level volatile analytes. Four (4) samples; ETFL6, ETFL7, ETFM6 and ETFM7, were analyzed for the low level volatile and aroclor analytes.

All samples were analyzed according to CLP SOW SOM02.4 (10/2016). The data package was reviewed according to the January 2017 NFG for SOM02.4 (EPA-540-R-2017-002) and the Region 5 ESAT Organic CLP Validation SOP.

Sample ETFG8 was designated by the samplers to be used for laboratory QC, i.e. MS/MSD analyses. ETFG8 was used as parent sample for the volatile MS/MSD. No MS/MSD were analyzed for the aroclor analyses due to insufficient sample volume.

No samples were identified as trip blanks, equipment blanks or field blanks. Samples ETFG9/ETFH0 and ETFL6/ETFL7 were identified as field duplicate pairs.

1. PRESERVATION AND HOLDING TIMES

No problems found.

2. GAS CHROMATOGRAPH/MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

No problems found.

3. INITIAL CALIBRATION

No problems found.

4. INITIAL CALIBRATION VERIFICATION

No problems found.

5. CONTINUING CALIBRATION

The following volatile samples are associated with a closing CCV with %Difference exceeding criteria. Detects are qualified as estimated J. Non-detects are qualified as estimated UJ.

ETFG3, ETFG4, ETFG7, ETFG8, ETFG8MS, ETFG8MSD, ETFH1, ETFJ2, ETFK2,
ETFK3, ETFK4, ETFK5, ETFK6, ETFK7, ETFL6, ETFL7, ETFM6, VBLKFG
Acetone

6. BLANKS

No problems found.

7. DEUTERATED MONITORING COMPOUNDS / SURROGATES

The following volatile samples have DMC/surrogate percent recoveries greater than the primary maximum criteria. Detects are qualified as estimated J+. Non-detects are not qualified.

ETFG3, ETFG4, ETFG7, ETFG8, ETFH1, ETFJ2, ETFK2, ETFK4, ETFK5, ETFK6,
ETFK7, ETFL6, ETFL7, ETFM6
Vinyl chloride

ETFG8MS
Vinyl chloride, 1,1-Dichloroethene, trans-1,2-Dichloroethene, cis-1,2-Dichloroethene

8. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Sample ETFG8 was designated by the samplers to be used for laboratory QC, i.e. MS/MSD analyses. ETFG8 was used as parent sample for the volatile MS/MSD. No MS/MSD were analyzed for the aroclor analyses due to insufficient sample volume.

No problems found.

9. FLORISIL CARTRIDGE PERFORMANCE CHECK

Not required for this analysis.

10. CLEANUP PROCEDURES

No problems found.

11. LABORATORY CONTROL SAMPLE

No problems found.

12. INTERNAL STANDARD

No problems found.

13. TARGET ANALYTE IDENTIFICATION

The following volatile samples have analyte results greater than the upper limit of calibration range. Samples were re-analyzed at further dilution to bring the detections within the calibration ranges.

ETFG9, ETFH0
Vinyl chloride, cis-1,2-Dichloroethene

ETFJ1
cis-1,2-Dichloroethene, Trichloroethene

The following aroclor samples have analyte results greater than the upper limit of calibration range. Samples were re-analyzed at dilution to bring the detections within the calibration ranges.

ETFM7
Aroclor-1242

The relative percent differences between analyte results for the following aroclor samples are greater than 25%. Detects with results greater than 10% the CRQL are qualified as estimated J.

ETFM6, ETFM7
Aroclor-1242

14. REPORTED CONTRACT QUANTITATION LIMIT

The following volatile samples have analyte results greater than or equal to detection limit (MDL) and below the contract required quantitation limit (CRQL). Detects are qualified as estimated J.

ETFG7
Vinyl chloride, 1,1-Dichloroethane, cis-1,2-Dichloroethene

ETFG9, ETFK2
1,1-Dichloroethene

ETFH0
1,1-Dichloroethene, trans-1,2-Dichloroethene

ETFH1, ETFK3, ETFK6
Vinyl chloride, cis-1,2-Dichloroethene

ETFJ1
trans-1,2-Dichloroethene

ETFK7
Vinyl chloride, Methyl acetate, cis-1,2-Dichloroethene, Trichloroethene

ETKM6, ETFN0
Vinyl chloride

ETFM7
cis-1,2-Dichloroethene, Benzene, Ethylbenzene, o-Xylene, Isopropylbenzene

VBLKJG
1,2,4-Trichlorobenzene, 1,2,3-Trichlorobenzene

The following aroclor samples have analyte results greater than or equal to method detection limit (MDL) and below contract required quantitation limit (CRQL). Detects are qualified as estimated J.

ALCS90
Aroclor-1260

ETFM6
Aroclor-1242

15. TENTATIVELY IDENTIFIED COMPOUNDS

Sample results are identified in the separate Data Validation Report titled 'Tentatively Identified Compounds'. The manually reviewed report is titled '48662 sdg ETFG3'.

The following volatile sample reported a common laboratory contaminant TIC below the NFG criteria of 100 µg/L. The TIC is qualified as a non-detect U and removed from the EXES TIC Report and Sample Summary Report.

CAS No. 556-67-2 Cyclotetrasiloxane, Octamethyl
ETFK2

16. SYSTEM PERFORMANCE

No problems found.

17. FIELD QC SAMPLES

No samples were identified as trip blank, equipment blank or field blanks. Samples ETFG9/ETFH0 and ETFL6/ETFL7 were identified as field duplicate pairs. No target compounds or TICs were detected in field duplicate pair ETFL6/ETFL7. The sample results and RPDs for field duplicate pair ETFG9/ETFH0 are summarized in the following table:

CLP Sample No.	ETFG9	ETFH0	
Sample Identifier:	OMC-MW-602D	OMC-MW-602D-R	
Location:	MW-602D	MW-602D	
Collection Date/Time:	12/04/2019 09:50	12/04/2019 09:56	RPD
Dilution factor:	10	10	
Units:	µg/L	µg/L	%
Vinyl chloride	4800 E	4700 E	2.1
1,1-Dichloroethene	23 J	23 J	0
trans-1,2-Dichloroethene	50	43 J	15
cis-1,2-Dichloroethene	11000 E	11000 E	0
	ETFG9DL	ETFH0DL	
Dilution factor:	100	100	
Vinyl chloride	5600	5500	1.8
cis-1,2-Dichloroethene	11000	10000	9.5

18. OVERALL ASSESSMENT

Manual integrations were performed for some samples. These manual integrations were reviewed by the reviewer and appear to be acceptable without additional qualifications.

Validation Data Qualifier Sheet

<u>Qualifiers</u>	<u>Data Qualifier Definitions</u>
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the results may be biased high.
J-	The result is an estimated quantity, but the results may be biased low.
NJ	The analyte has been “tentatively identified” or “presumptively” as present and the associated numerical value is the estimated concentration in the sample.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.
C	The target Pesticide or Aroclor analyte identification has been confirmed by Gas Chromatograph/Mass Spectrometer (GC/MS).
X	The target Pesticide or Aroclor analyte identification was not confirmed when GC/MS analysis was performed.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V
SUPERFUND DIVISION

DATE:

SUBJECT: Review of Data
Received for Review on: December 26, 2019

FROM: Timothy Prendiville, Supervisor (SR-6J)
Science and Quality Assurance Section

TO: Data User: Jacobs
Email Address: Kaitlin.Ma@jacobs.com

Electronic and Manual Validation for Region 5

We have reviewed the data for the following case:

SITE Name: Outboard Marine Corporation (IL)

Case No: 48662 MA No: _____ SDG No: ETFF5

Number and Type of Samples: 20 waters (20 Low/Medium Volatiles, 12 Aroclors)

Sample Numbers: ETFF2 – ETFF9, ETFG0 – ETFG2, ETFJ3, ETFJ4, ETFL1 – ETFL5, ETFN2, ETFN3

Laboratory: Shealy Environmental Services, Inc. (EQI) Hrs. for Review:

Following are our findings:

CC: Howard Pham
Region 5 ESAT Contracting Officer's Representative
Mail Code: SA-5J

Below is a summary of the out-of-control audits and the possible effects on the data for this case:

Twenty (20) preserved water samples; ETFF2 thru ETFF9, ETFG0 thru ETFG2, ETFJ3, ETFJ4, ETFL1 thru ETFL5, ETFN2 and ETFN3, were shipped to Shealy Environmental Services, Inc (EQI) located in West Columbia, SC. The samples were collected December 2-3, 2019 and received intact December 4-5, 2019. The aroclor portions of four (4) samples; ETFF7, ETFF8, ETFN2 and ETFN3, arrived with a cooler temperature of 7.0 °C. All other samples arrived with temperatures below 6°C.

Eight (8) samples; ETFF2 thru ETFF4, ETFF6, ETFF9, and ETFG0 thru ETFG2, were analyzed according to CLP SOW SOM02.4 (10/2016) for only the low/medium level volatile target analytes. Twelve (12) samples; ETFF5, ETFF7, ETFF8, ETFJ3, ETFJ4, ETFL1 thru ETFL5, ETFN2 and ETFN3 were analyzed according to CLP SOW SOM02.4 (10/2016) for the low/medium level volatile and aroclor target analytes. The data package was reviewed according to the January 2017 NFG for SOM02.4 (EPA-540-R-2017-002) and the Region 5 ESAT Organic CLP Validation SOP.

Sample ETFG1 was designated for laboratory QC, i.e. MS/MSD analyses for the volatile analyses. No MS/MSD analyses was requested for the aroclor samples.

None of the samples in this SDG were identified as a trip blank. Sample ETFN2 was identified as an equipment blank and sample ETFN3 as a field blank. Sample ETFF3 was identified as a replicate of sample ETFF2 and sample ETFL5 as a replicate of sample ETFL4.

1. PRESERVATION AND HOLDING TIMES

The following aroclor samples are received with shipping container temperatures greater than 6°C. Detects and nondetects are not qualified for this noncompliance.

ETFF7, ETFF8, ETFN2, ETFN3

2. GAS CHROMATOGRAPH/MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

No problems found.

3. INITIAL CALIBRATION

No problems found.

4. INITIAL CALIBRATION VERIFICATION

No problems found.

5. CONTINUING CALIBRATION

The following volatile samples are associated with an opening or closing CCV with % Difference exceeding criteria. Detects are qualified as estimated J. Nondetects are qualified as estimated UJ.

ETFF2, ETFF3, ETFG1, ETFG1MS, ETFG1MSD, ETFJ3, ETFN2, ETFN3, VBLKEJ,
VBLKGZ
Acetone

6. BLANKS

The following volatile sample reported a contamination below the CRQL. The associated field QC samples (ETFN2 and ETFN3) reported the same contamination. Detects are qualified U as a nondetect. Sample concentration is reported at the CQL.

ETFG1DL
Toluene

7. DEUTERATED MONITORING COMPOUNDS / SURROGATES

The following volatile samples have DMC/surrogate percent recoveries greater than the primary maximum criteria. Detects are qualified as estimated J+. Nondetects are not qualified.

ETFF2, ETFF3, ETFF3DL, ETFF4, ETFF5, ETFF6, ETFG1DL
Vinyl chloride

ETFF2DL, ETFN3
Dichlorodifluoromethane, Chloromethane, Vinyl chloride, Bromomethane, Chloroethane,
Carbon disulfide, Trichloroethene, Toluene, Tetrachloroethene, Ethylbenzene, o-Xylene,
m,p-Xylene, Styrene, Isopropylbenzene

8. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Sample ETFG1 was designated for laboratory QC, i.e. MS/MSD analyses for the volatile analyses. No MS/MSD analyses was requested for the aroclor samples.

The volatile relative percent difference (RPD) between the following matrix spike and matrix spike duplicate recoveries is outside criteria. Detects in the unspiked sample are qualified as estimated J. Nondetects in the unspiked sample are not qualified.

ETFG1MS, ETFG1MSD
Benzene

The following volatile matrix spike/ matrix spike duplicate samples have percent recoveries greater than the primary maximum criteria. Detects in the unspiked sample are qualified as estimated J. Nondetects in the unspiked sample are not qualified.

ETFG1MSD
Benzene

9. FLORISIL CARTRIDGE PERFORMANCE CHECK

Not required for these analyses.

10. CLEANUP PROCEDURES

Not required for these analyses.

11. LABORATORY CONTROL SAMPLE

No problems found.

12. INTERNAL STANDARD

No problems found.

13. TARGET ANALYTE IDENTIFICATION

No problems found.

14. REPORTED CONTRACT QUANTITATION LIMIT

The following volatile samples have analyte results greater than or equal to method detection limit (MDL) and below contract required quantitation limit (CRQL). Detects are qualified as estimated J.

ETFF2, ETFF3
trans-1,2-Dichloroethene

ETFF4, ETFL2
Vinyl chloride, cis-1,2-Dichloroethene

ETFF7
Vinyl chloride, Benzene

ETFF8
Vinyl chloride, 1,1-Dichloroethane, cis-1,2-Dichloroethene

ETFF9, ETFG1, ETFG1MS, ETFL1
Vinyl chloride

ETFJ3
1,1-Dichloroethene, trans-1,2-Dichloroethene

ETFJ4
trans-1,2-Dichloroethene, cis-1,2-Dichloroethene

ETFL3
1,1-Dichloroethane, cis-1,2-Dichloroethene

ETFN2
2-Butanone, Toluene

ETFN3
Acetone, 2-Butanone, Toluene

VBLKJG
1,2,4-Trichlorobenzene, 1,2,3-Trichlorobenzene

The following aroclor samples have analyte results greater than or equal to method detection limit (MDL) and below contract required quantitation limit (CRQL). Detects are qualified as estimated J.

ALCS90
Aroclor-1260

15. TENTATIVELY IDENTIFIED COMPOUNDS

Sample results are identified in the separate Data Validation Report titled 'Tentatively Identified Compounds'. The manually reviewed report is titled 'NFG_TIC.OUTBOARD_MARINE_CORP._Project.48662.EPW14035.ETFF5.rtf'.

16. SYSTEM PERFORMANCE

No problems found.

17. FIELD QC SAMPLES

None of the samples in this SDG were identified as a trip blank. Sample ETFN2 was identified as an equipment blank and sample ETFN3 as a field blank. The results are summarized in the following table:

QC Sample Type:	Equipment Blank	Field Blank
CLP Sample ID:	ETFN2	ETFN3
Location:	Equipment Blank	Field Blank
Sample Identifier:	OMC-EB-120319	OMC-FB-120319
Collection Date/Time:	12/03/2019 10:05	12/03/2019 09:55
VOA Receipt Date, Temp	12/05/2019 10:40	12/05/2019 10:40
PCB Receipt Date, Temp	12/04/2019 11:06	12/04/2019 11:06
Units:	µg/L	µg/L
Acetone	13	6.5 J
2-Butanone	6.8 J	8.4 J
Toluene	2.2 J	2.1 J
Associated field samples:	ETFF2, ETFF2DL, ETFF3, ETFF3DL, ETFF4, ETFF5, ETFF6, ETFF7, ETFF8, ETFF9, ETFG0, ETFG1, ETFG1DL, ETFG1MS, ETFG1MSD, ETFG2, ETFJ3, ETFJ3DL, ETFJ4, ETFL1, ETFL2, ETFL3, ETFL4, ETFL5	

Sample ETFF3 was identified as a replicate of sample ETFF2 and sample ETFL5 as a replicate of sample ETFL4. No detections were reported for samples ETFL4 and ETFL5. The results and RPDs are summarized in the following table:

CLP Sample No.	ETFF2	ETFF3	
Location:	MW-11D	MW-11D	
Sample Identifier:	OMC-MW-11D	OMC-MW-11D-R	
Collection Date/Time:	12/03/2019 10:50	12/03/2019 10:55	
VOA Receipt Date, Temp	12/05/2019 10:40	12/05/2019 10:40	RPDs
Units:	µg/L	µg/L	%
Dilution factor	1	1	
Vinyl chloride	1700 E	1600 E	6.1
1,1-Dichloroethene	6.2	6.1	1.6
Trans-1,2-Dichloroethene	3.2	2.7	16.9
Cis-1,2-Dichloroethene	2200 E	2300 E	4.4
No. of VOA TICs	2	1	
CLP Sample No.	ETFF2DL	ETFF3DL	
Dilution factor	10	10	
Vinyl chloride	1300	1100	16.7
Cis-1,2-Dichloroethene	1700	1500	12.5

18. OVERALL ASSESSMENT

The following samples have one or more target compounds with concentrations that exceed the volatile calibration range. Samples were properly diluted. Concentrations are reported from the dilutions with their associated dilution factor.

ETFF2, ETFF3, ETFJ3
Vinyl chloride, cis-1,2-Dichloroethene

ETFG1
Benzene

The following QC samples have one or more target compounds with concentrations that exceed the volatile calibration range. Detections are qualified as estimated J.

ETFG1MS, EFTG1MSD
Benzene

Manual integrations were performed for some of the samples due to a “peak integrated by software incorrectly” according to the laboratory narrative. These manual integrations were reviewed by the reviewer and appear to be acceptable without additional qualifications.

Case No: 48662
Site Name: Outboard Marine Corporation (IL)

Page 8 of 9
SDG No: ETFF5
Laboratory: EQI

The following volatile samples reported a common laboratory contaminant TIC below the NFG criteria of 100 µg/L. The TIC is qualified as a nondetect U and removed from the EXES TIC Report and Sample Summary Report.

CAS No. 556-67-2 Cyclotetrasiloxane, octamethyl-
ETFF3, ETFG1

Validation Data Qualifier Sheet

<u>Qualifiers</u>	<u>Data Qualifier Definitions</u>
U	The analyte was analyzed for and was not detected above the reported sample quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the results may be biased high.
J-	The result is an estimated quantity, but the results may be biased low.
NJ	The analyte has been “tentatively identified” or “presumptively” as present and the associated numerical value is the estimated concentration in the sample.
UJ	The analyte was analyzed for and was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.
C	The target Pesticide or Aroclor analyte identification has been confirmed by Gas Chromatograph/Mass Spectrometer (GC/MS).
X	The target Pesticide or Aroclor analyte identification was not confirmed when GC/MS analysis was performed.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V
SUPERFUND DIVISION

DATE:

SUBJECT: Review of Data
Received for Review on: January 2, 2020

FROM: Timothy Prendiville, Supervisor (SR-6J)
Science and Quality Assurance Section

TO: Data User: Jacobs
Email Address: Kaitlin.Ma@jacobs.com

Electronic and Manual Validation for Region 5

We have reviewed the data for the following case:

SITE Name: Outboard Marine Corporation (IL)

Case No: 48662 MA No: _____ SDG No: ETFK9

Number and Type of Samples: 11 waters (11 Low/Medium Volatiles, 4 Aroclors)

Sample Numbers: ETFK9, ETFL0, ETFL8, ETFL9, ETFM2 – ETFM5, ETFM8, ETFM9, ETFN5

Laboratory: Shealy Environmental Services, Inc. (EQI) Hrs. for Review:

Following are our findings:

CC: Howard Pham
Region 5 ESAT Contracting Officer's Representative
Mail Code: SA-5J

Case No: 48662
Site Name: Outboard Marine Corporation (IL)

Page 2 of 6
SDG No: ETKF9
Laboratory: EQI

Below is a summary of the out-of-control audits and the possible effects on the data for this case:

Eleven (11) preserved water samples; ETKF9, ETFL0, ETFL8, ETFL9, ETFM2 thru ETFM5, ETFM8, ETFM9 and ETFN5, were shipped to Shealy Environmental Services, Inc (EQI) located in West Columbia, SC. The samples were collected December 5-6, 2019 and received intact on December 7, 2019.

Seven (7) samples; ETKF9, ETFL0, ETFM4, ETFM5, ETFM8, ETFM9 and ETFN5, were analyzed according to CLP SOW SOM02.4 (10/2016) for only the low/medium level volatile target analytes. Four (4) samples; ETFL8, ETFL9, ETFM2 and ETFM3 were analyzed according to CLP SOW SOM02.4 (10/2016) for the low/medium level volatile and aroclor target analytes. The data package was reviewed according to the January 2017 NFG for SOM02.4 (EPA-540-R-2017-002) and the Region 5 ESAT Organic CLP Validation SOP.

No sample was designated for laboratory QC, i.e. MS/MSD analyses. No MS/MSD analyses was conducted for this SDG.

None of the samples in this SDG were identified as field blanks. Sample ETFN5 was identified as a trip blank. Sample ETFL0 was identified as a replicate of sample ETKF9.

1. PRESERVATION AND HOLDING TIMES

No problems found.

2. GAS CHROMATOGRAPH/MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

No problems found.

3. INITIAL CALIBRATION

No problems found.

4. INITIAL CALIBRATION VERIFICATION

No problems found.

5. CONTINUING CALIBRATION

The following volatile samples are associated with an opening or closing CCV with % Difference exceeding criteria. Detects are qualified as estimated J. Nondetects are qualified as estimated UJ.

ETFM8DL, ETFM9, VBLKHX
Acetone

6. BLANKS

No problems found.

7. DEUTERATED MONITORING COMPOUNDS / SURROGATES

The following volatile samples have DMC/surrogate percent recoveries greater than the primary maximum criteria. Detects are qualified as estimated J+. Nondetects are not qualified.

ETFK9, ETFL0, ETFL8, ETFM3, ETFM8
Vinyl chloride

The following aroclor samples have surrogate percent recoveries greater than the primary maximum criteria but are less than or equal to the expanded maximum criteria. Detects are qualified as estimated J+. Nondetects are not qualified.

ETFL9, ETFL9DL
Aroclor-1016, Aroclor-1221, Aroclor-1232, Aroclor-1242, Aroclor-1248, Aroclor-1254,
Aroclor-1260, Aroclor-1262, Aroclor-1268

8. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

No sample was designated for laboratory QC, i.e. MS/MSD analyses. No MS/MSD analyses was conducted for this SDG.

9. FLORISIL CARTRIDGE PERFORMANCE CHECK

Not required for these analyses.

10. CLEANUP PROCEDURES

No problems found.

11. LABORATORY CONTROL SAMPLE

No problems found.

12. INTERNAL STANDARD

No problems found.

13. TARGET ANALYTE IDENTIFICATION

No problems found.

14. REPORTED CONTRACT QUANTITATION LIMIT

The following volatile samples have analyte results greater than or equal to method detection limit (MDL) and below contract required quantitation limit (CRQL). Detects are qualified as estimated J.

ETFL8
Vinyl chloride, trans-1,2-Dichloroethene

ETFL9, ETFM8, ETFM9
cis-1,2-Dichloroethene

VHBLK01
Acetone

The following aroclor samples have analyte results greater than or equal to method detection limit (MDL) and below contract required quantitation limit (CRQL). Detects are qualified as estimated J.

Case No: 48662
Site Name: Outboard Marine Corporation (IL)

Page 5 of 6
SDG No: ETFK9
Laboratory: EQI

ALCS62
Aroclor-1016, Aroclor-1260

ETFM2, ETFM3
Aroclor-1242

15. TENTATIVELY IDENTIFIED COMPOUNDS

No tentatively identified compounds (TICs) were reported for this SDG.

16. SYSTEM PERFORMANCE

No problems found.

17. FIELD QC SAMPLES

None of the samples in this SDG were identified as field blanks. Sample ETFN5 was identified as a trip blank. No target analytes (TCLs) or tentatively identified compounds (TICs) were reported for this sample.

Sample ETFL0 was identified as a replicate of sample ETFK9. No target analytes (TCLs) or tentatively identified compounds (TICs) were reported for these samples.

18. OVERALL ASSESSMENT

The following samples have one or more target compounds with concentrations that exceed the volatile calibration range. Samples were properly diluted. Concentrations are reported from the dilutions with their associated dilution factor.

ETFM8
Vinyl chloride

The following samples have one or more target compounds with concentrations that exceed the aroclor calibration range. Samples were properly diluted. Concentrations are reported from the dilutions with their associated dilution factor.

ETFL8, ETFL9
Aroclor-1242

Manual integrations were performed for some of the samples due to a “peak integrated by software incorrectly” according to the laboratory narrative. These manual integrations were reviewed by the reviewer and appear to be acceptable without additional qualifications.

Validation Data Qualifier Sheet

<u>Qualifiers</u>	<u>Data Qualifier Definitions</u>
U	The analyte was analyzed for and was not detected above the reported sample quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the results may be biased high.
J-	The result is an estimated quantity, but the results may be biased low.
NJ	The analyte has been “tentatively identified” or “presumptively” as present and the associated numerical value is the estimated concentration in the sample.
UJ	The analyte was analyzed for and was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.
C	The target Pesticide or Aroclor analyte identification has been confirmed by Gas Chromatograph/Mass Spectrometer (GC/MS).
X	The target Pesticide or Aroclor analyte identification was not confirmed when GC/MS analysis was performed.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V
SUPERFUND DIVISION

DATE:

SUBJECT: Review of Data
Received for Review on: December 30, 2019

FROM: Timothy Prendiville, Supervisor (SR-6J)
Science and Quality Assurance Section

TO: Data User: Jacobs
Email Address: Kaitlin.Ma@jacobs.com

Electronic and Manual Validation for Region 5

We have reviewed the data for the following case:

SITE Name: Outboard Marine Corporation (IL)

Case No: 48662 MA No: _____ SDG No: ETFM0

Number and Type of Samples: 6 waters (3 Low/Medium Volatiles, 4 Aroclors)

Sample Numbers: ETFJ8, ETFM0, ETFM4, ETFM5, ETFN1, ETFN4

Laboratory: Shealy Environmental Services, Inc. (EQI) Hrs. for Review:

Following are our findings:

CC: Howard Pham
Region 5 ESAT Contracting Officer's Representative
Mail Code: SA-5J

Below is a summary of the out-of-control audits and the possible effects on the data for this case:

Six (6) preserved water samples; ETFJ8, ETFM0, ETFM4, ETFM5, ETFN1 and ETFN4, were shipped to Shealy Environmental Services, Inc (EQI) located in West Columbia, SC. The samples were collected December 4-5, 2019 and received intact December 5-6, 2019.

Two (2) samples; ETFN1 and ETFN4, were analyzed according to CLP SOW SOM02.4 (10/2016) for only the low/medium level volatile target analytes. One (1) sample, ETFM0, was analyzed according to CLP SOW SOM02.4 (10/2016) for the low/medium level volatile and aroclor target analytes. Three (3) samples; ETFJ8, ETFM4 and ETFM5, were analyzed according to CLP SOW SOM02.4 (10/2016) for only the aroclor target analytes. The data package was reviewed according to the January 2017 NFG for SOM02.4 (EPA-540-R-2017-002) and the Region 5 ESAT Organic CLP Validation SOP.

Sample ETFM0 was designated for laboratory QC, i.e. MS/MSD analyses for the volatile analyses.

Sample ETFN4 was identified as a trip blank. No samples were identified as either field blanks or field duplicates.

1. PRESERVATION AND HOLDING TIMES

No problems found.

2. GAS CHROMATOGRAPH/MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

No problems found.

3. INITIAL CALIBRATION

No problems found.

4. INITIAL CALIBRATION VERIFICATION

No problems found.

5. CONTINUING CALIBRATION

No problems found.

6. BLANKS

No problems found.

7. DEUTERATED MONITORING COMPOUNDS / SURROGATES

No problems found.

8. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Sample ETFM0 was designated for laboratory QC, i.e. MS/MSD analyses for the volatile analyses.

No problems found.

9. FLORISIL CARTRIDGE PERFORMANCE CHECK

Not required for these analyses.

10. CLEANUP PROCEDURES

No problems found.

11. LABORATORY CONTROL SAMPLE

No problems found.

12. INTERNAL STANDARD

No problems found.

13. TARGET ANALYTE IDENTIFICATION

The following aroclor samples have result difference between the two columns greater than 25%. Detects are qualified as estimated J.

ETFJ8, ETFJ8DL
Aroclor-1242

14. REPORTED CONTRACT QUANTITATION LIMIT

The following volatile samples have analyte results greater than or equal to method detection limit (MDL) and below contract required quantitation limit (CRQL). Detects are qualified as estimated J.

ETFM0, ETFM0MSD
Vinyl chloride

ETFM0MS
Vinyl chloride, cis-1,2-Dichloroethene

ETFN1
trans-1,2-Dichloroethene

ETFN1DL
1,1-Dichloroethene

VBLKJG
1,2,4-Trichlorobenzene, 1,2,3-Trichlorobenzene

The following aroclor samples have analyte results greater than or equal to method detection limit (MDL) and below contract required quantitation limit (CRQL). Detects are qualified as estimated J.

ALCS62
Aroclor-1016, Aroclor-1260

ALCS90
Aroclor-1260

ETFM4, ETFM5
Aroclor-1242

15. TENTATIVELY IDENTIFIED COMPOUNDS

No tentatively identified compounds were found in this SDG.

16. SYSTEM PERFORMANCE

No problems found.

17. FIELD QC SAMPLES

Sample ETFN4 was identified as a trip blank. No target analytes (TCLs) or tentatively identified compounds (TICs) were detected in the sample. No samples were identified as either field blanks or field duplicates.

18. OVERALL ASSESSMENT

The following volatile samples have one or more target compounds with concentrations that exceed the volatile calibration range. Samples were properly diluted. Concentrations are reported from the dilutions with their associated dilution factor.

ETFN1
cis-1,2-Dichloroethene

The following aroclor samples have one or more target compounds with concentrations that exceed the volatile calibration range. Samples were properly diluted. Concentrations are reported from the dilutions with their associated dilution factor.

ETFJ8
Aroclor-1242

Manual integrations were performed for some of the samples due to a “peak integrated by software incorrectly” according to the laboratory narrative. These manual integrations were reviewed by the reviewer and appear to be acceptable without additional qualifications.

Validation Data Qualifier Sheet

<u>Qualifiers</u>	<u>Data Qualifier Definitions</u>
U	The analyte was analyzed for and was not detected above the reported sample quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the results may be biased high.
J-	The result is an estimated quantity, but the results may be biased low.
NJ	The analyte has been “tentatively identified” or “presumptively” as present and the associated numerical value is the estimated concentration in the sample.
UJ	The analyte was analyzed for and was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.
C	The target Pesticide or Aroclor analyte identification has been confirmed by Gas Chromatograph/Mass Spectrometer (GC/MS).
X	The target Pesticide or Aroclor analyte identification was not confirmed when GC/MS analysis was performed.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V
SUPERFUND DIVISION

DATE:

SUBJECT: Review of Data
Received for Review on: December 30, 2019

FROM: Timothy Prendiville, Supervisor (SR-6J)
Science and Quality Assurance Section

TO: Data User: Jacobs
Email Address: Kaitlin.Ma@jacobs.com

Electronic and Manual Validation for Region 5

We have reviewed the data for the following case:

SITE Name: Outboard Marine Corporation (IL)

Case No: 48662 MA No: _____ SDG No: ETFM1

Number and Type of Samples: 20 waters (20 Low/Medium Volatiles, 1 Aroclor)

Sample Numbers: ETFG5, ETFG6, ETFH2 – ETFH9, ETFJ0, ETFJ5 – ETFJ9, ETFK0, ETFK1, ETFK8, ETFM1

Laboratory: Shealy Environmental Services, Inc. (EQI) Hrs. for Review:

Following are our findings:

CC: Howard Pham
Region 5 ESAT Contracting Officer's Representative
Mail Code: SA-5J

Below is a summary of the out-of-control audits and the possible effects on the data for this case:

Twenty (20) preserved water samples; ETFG5, ETFG6, ETFH2 thru ETFH9, ETFJ0, ETFJ5 thru ETFJ9, ETFK0, ETFK1, ETFK8 and ETFM1, were shipped to Shealy Environmental Services, Inc (EQI) located in West Columbia, SC. The samples were collected December 4th – 6th, 2019 and received intact on December 5th and 7th, 2019.

One (1) sample, ETFM1, was analyzed according to CLP SOW SOM02.4 (10/2016) for the low/medium level volatile and aroclor target analytes. The remaining nineteen (19) samples were analyzed according to CLP SOW SOM02.4 (10/2016) for only the low/medium level volatile target analytes. The data package was reviewed according to the January 2017 NFG for SOM02.4 (EPA-540-R-2017-002) and the Region 5 ESAT Organic CLP Validation SOP.

Sample ETFM1 was designated for laboratory QC, i.e. MS/MSD analyses for the volatile analyses.

None of the samples in this SDG were identified as trip blanks or field blanks. Sample ETFH7 was identified as a replicate of sample ETFH6 and sample ETFJ7 as a replicate of sample ETFJ6.

1. PRESERVATION AND HOLDING TIMES

No problems found.

2. GAS CHROMATOGRAPH/MASS SPECTROMETER INSTRUMENT PERFORMANCE CHECK

No problems found.

3. INITIAL CALIBRATION

No problems found.

4. INITIAL CALIBRATION VERIFICATION

No problems found.

5. CONTINUING CALIBRATION

The following volatile samples are associated with an opening or closing CCV with % Difference exceeding criteria. Detects are qualified as estimated J. Nondetects are qualified as estimated UJ.

ETFH4DL, ETFH5DL, ETFH8, ETFH8DL, ETFK0, ETFK0DL, ETFK1, VBLKHX,
VBLKIQ, VHBLK01
Acetone

6. BLANKS

No problems found.

7. DEUTERATED MONITORING COMPOUNDS / SURROGATES

The following volatile samples have DMC/surrogate percent recoveries greater than the primary maximum criteria. Detects are qualified as estimated J+. Nondetects are not qualified.

ETFH2, ETFH4, ETFH5, ETFJ0, ETFJ6, ETFJ7, ETFK8
Vinyl chloride

ETFJ9
Dichlorodifluoromethane, Chloromethane, Vinyl chloride, Bromomethane, Chloroethane,
Carbon disulfide, Trichloroethene, Toluene, Tetrachloroethene, Ethylbenzene, o-Xylene,
m,p-Xylene, Styrene, Isopropylbenzene

8. MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Sample ETFM1 was designated for laboratory QC, i.e. MS/MSD analyses for the volatile analyses.

No problems found.

9. FLORISIL CARTRIDGE PERFORMANCE CHECK

Not required for these analyses.

10. CLEANUP PROCEDURES

No problems found.

11. LABORATORY CONTROL SAMPLE

No problems found.

12. INTERNAL STANDARD

No problems found.

13. TARGET ANALYTE IDENTIFICATION

No problems found.

14. REPORTED CONTRACT QUANTITATION LIMIT

The following volatile samples have analyte results greater than or equal to method detection limit (MDL) and below contract required quantitation limit (CRQL). Detects are qualified as estimated J.

ETFG5, ETFK8
Acetone, cis-1,2-Dichloroethene, 2-Butanone

ETFG6, ETFH3
Vinyl chloride

ETFH2, ETFH9, ETFK0
trans-1,2-Dichloroethene

ETFH4
1,1-Dichloroethene, 2-Butanone

ETFH6, ETFH7
1,1-Dichloroethene, trans-1,2-Dichloroethene

ETFH8
1,1-Dichloroethene, trans-1,2-Dichloroethene, 1,1-Dichloroethane

ETFH8DL, ETFK0DL
1,1-Dichloroethene, Trichloroethene

ETFJ5
Methylene chloride, trans-1,2-Dichloroethene, cis-1,2-Dichloroethene

ETFJ8
1,1-Dichloroethene, trans-1,2-Dichloroethene

The following aroclor samples have analyte results greater than or equal to method detection limit (MDL) and below contract required quantitation limit (CRQL). Detects are qualified as estimated J.

ALCS90
Aroclor-1260

15. TENTATIVELY IDENTIFIED COMPOUNDS

Sample results are identified in the separate Data Validation Report titled 'Tentatively Identified Compounds'. The manually reviewed report is titled 'NFG_TIC.OUTBOARD_MARINE_CORP._Project.48662.EPW14035.ETFM1.rtf'.

16. SYSTEM PERFORMANCE

No problems found.

17. FIELD QC SAMPLES

None of the samples in this SDG were identified as trip blanks or field blanks. Sample ETFH7 was identified as a replicate of sample ETFH6 and sample ETFJ7 as a replicate of sample ETFJ6. No target analytes (TCLs) or tentatively identified compounds (TICs) were detected in samples ETFJ6 and ETFJ7. The results and RPDs for samples ETFH6 and ETFH7 are summarized in the following table:

CLP Sample No.	ETFH6	ETFH7	
Location:	MW-605D	MW-605D	
Sample Identifier:	OMC-MW-605D	OMC-MW-605D-R	
Collection Date/Time:	12/05/2019 13:41	12/05/2019 13:44	
VOA Receipt Date, Temp	12/07/2019 09:12	12/07/2019 09:12	RPDs
Units:	µg/L	µg/L	%
Dilution factor	10.0	10.0	
Vinyl chloride	4600 E	4800 E	4.3
1,1-Dichloroethene	13 J	13 J	0.0
trans-1,2-Dichloroethene	13 J	13 J	0.0
cis-1,2-Dichloroethene	11000 E	11000 E	0.0
CLP Sample No.	ETFH6DL	ETFH7DL	
Dilution factor	100.0	100.0	
Vinyl chloride	5200	5500	5.6
cis-1,2-Dichloroethene	10000	11000	9.5

18. OVERALL ASSESSMENT

The following samples have one or more target compounds with concentrations that exceed the volatile calibration range. Samples were properly diluted. Concentrations are reported from the dilutions with their associated dilution factor.

ETFH2, ETFH4, ETFH6, ETFH7, ETFK0
Vinyl chloride, cis-1,2-Dichloroethene

ETFH5
Vinyl chloride

ETFH8
cis-1,2-Dichloroethene

ETFJ8
Vinyl chloride, cis-1,2-Dichloroethene, Trichloroethene

Manual integrations were performed for some of the samples due to a “peak integrated by software incorrectly” according to the laboratory narrative. These manual integrations were reviewed by the reviewer and appear to be acceptable without additional qualifications.

Validation Data Qualifier Sheet

<u>Qualifiers</u>	<u>Data Qualifier Definitions</u>
U	The analyte was analyzed for and was not detected above the reported sample quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the results may be biased high.
J-	The result is an estimated quantity, but the results may be biased low.
NJ	The analyte has been “tentatively identified” or “presumptively” as present and the associated numerical value is the estimated concentration in the sample.
UJ	The analyte was analyzed for and was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.
C	The target Pesticide or Aroclor analyte identification has been confirmed by Gas Chromatograph/Mass Spectrometer (GC/MS).
X	The target Pesticide or Aroclor analyte identification was not confirmed when GC/MS analysis was performed.

Regional Transmittal Form

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V**

DATE: 01/08/20

SUBJECT: Review of Data
Received for review on 12/10/19

FROM: Timothy Prendiville, Supervisor, Chief (SR-6J)
Superfund Contract Management Section

TO: Data User: Jacobs
Email address: kaitlin.ma@jacobs.com

LEVEL 3 DATA VALIDATION

We have reviewed the data for the following case:

SITE NAME: Outboard Marine Corp. (IL)

CASE NUMBER: 48662 **SDG NUMBER:** METFF2

Number and Type of Samples: 19 waters (metals)

Sample Numbers: METFF2-F9, G0-G2, G7, J3-J4, K4-K5, L1-L3

Laboratory: Chemtex **Hrs. for Review:** _____

Following are our findings:

CC: Howard Pham
Region 5 TPO
Mail Code: SA-5J

Below is a summary of the out-of-control audits and the possible effects on the data for this case:

Nineteen (19) water samples, numbered METFF2-F9, G0-G2, G7, J3-J4, K4-K5, L1-L3, were collected on December 2 and December 3, 2019. The lab received the samples on December 4, 2019 in good condition. All samples were analyzed for metals. All samples were analyzed using the CLP SOW ISM02.4 analysis procedures and reviewed according to the January 2017 NFG for ISM02.4 (EPA-540-R-2017-001).

The inorganic analyses were performed using an Inductively Coupled Plasma-Atomic Emission Spectroscopy (ICP-AES) procedure.

1. HOLDING TIME:

No defects were found.

2. CALIBRATIONS:

No defects were found for the calibrations.

3. BLANKS:

No defects were found for the preparation blank or ICB/CCBs.

No samples were identified as field blanks.

4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE AND LAB CONTROL SAMPLE:

No defects were found for matrix spike or laboratory control samples.

5. LABORATORY AND FIELD DUPLICATE:

No defects were found for the laboratory duplicate samples.

METFF2/F3 are field duplicates. No defects were found for the field duplicate samples.

6. ANALYSIS:

No defects were found for the serial dilution or ICS samples.

7. SAMPLE RESULTS:

The following inorganic samples have analyte concentrations reported above the method detection limit (MDL) but below the quantitation limit (CRQL).

Results are qualified "J".

Arsenic

METFF2, METFF3, METFF4, METFF9, METFG2, METFK4, METFK5, METFL1

Iron

METFG0, METFK5

All data, except those qualified above, are acceptable.

EXES ISM02.4 Data Qualifier Sheet

<u>Qualifiers</u>	<u>Data Qualifier Definitions</u>
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting Quality Control (QC) criteria. The analyte may or may not be present in the sample.
UJ	The analyte was analyzed for, but not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

Regional Transmittal Form

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V**

DATE: 01/06/20

SUBJECT: Review of Data
Received for review on 12/12/19

FROM: Timothy Prendiville, Supervisor, Chief (SR-6J)
Superfund Contract Management Section

TO: Data User: Jacobs
Email address: kaitlin.ma@jacobs.com

LEVEL 3 DATA VALIDATION

We have reviewed the data for the following case:

SITE NAME: Outboard Marine Corp. (IL)

CASE NUMBER: 48662 **SDG NUMBER:** METFG3

Number and Type of Samples: 18 waters (metals)

Sample Numbers: METFG3-G4, G9, H0-H1, J1-J2, K2-K3, K6-K7, L6-L7, M0, M6-M7, N0-N1

Laboratory: Chemtex **Hrs. for Review:** _____

Following are our findings:

CC: Howard Pham
Region 5 TPO
Mail Code: SA-5J

Below is a summary of the out-of-control audits and the possible effects on the data for this case:

Eighteen (18) water samples, numbered METFG3-G4, G9, H0-H1, J1-J2, K2-K3, K6-K7, L6-L7, M0, M6-M7, N0-N1, were collected on December 4, 2019. The lab received the samples on December 5, 2019 in good condition. All samples were analyzed for metals. All samples were analyzed using the CLP SOW ISM02.4 analysis procedures and reviewed according to the January 2017 NFG for ISM02.4 (EPA-540-R-2017-001).

The inorganic analyses were performed using an Inductively Coupled Plasma-Atomic Emission Spectroscopy (ICP-AES) procedure.

1. HOLDING TIME:

No defects were found.

2. CALIBRATIONS:

No defects were found for the calibrations.

3. BLANKS:

No defects were found for the preparation blank or ICB/CCBs.

No samples were identified as field blanks.

4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE AND LAB CONTROL SAMPLE:

No defects were found for matrix spike or laboratory control samples.

5. LABORATORY AND FIELD DUPLICATE:

No defects were found for the laboratory duplicate samples.

METFG9/H0 and METFL6/L7 are field duplicates. No defects were found for the field duplicate samples.

6. ANALYSIS:

No defects were found for the serial dilution or ICS samples.

7. SAMPLE RESULTS:

The following inorganic samples have analyte concentrations reported above the method detection limit (MDL) but below the quantitation limit (CRQL).

Results are qualified "J".

Arsenic

METFG3, METFG4, METFG9, METFH0, METFH1, METFJ1, METFJ2,
METFK3, METFK6, METFK7, METFL6, METFL7, METFN0, METFN1

Iron

METFG3

Manganese

METFJ2

All data, except those qualified above, are acceptable.

EXES ISM02.4 Data Qualifier Sheet

<u>Qualifiers</u>	<u>Data Qualifier Definitions</u>
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting Quality Control (QC) criteria. The analyte may or may not be present in the sample.
UJ	The analyte was analyzed for, but not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

Regional Transmittal Form

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V**

DATE: 01/06/2020

SUBJECT: Review of Data
Received for review on 12/17/19

FROM: Timothy Prendiville, Supervisor, Chief (SR-6J)
Superfund Contract Management Section

TO: Data User: Jacobs
Email address: kaitlin.ma@jacobs.com

LEVEL 3 DATA VALIDATION

We have reviewed the data for the following case:

SITE NAME: Outboard Marine Corp. (IL)

CASE NUMBER: 48662 **SDG NUMBER:** METFG8

Number and Type of Samples: 20 waters (metals)

Sample Numbers: METFG8, H2-H8, J8-J9, K0-K1, L4-L5, L8-L9, M2-M3, N2-N3

Laboratory: Chemtex **Hrs. for Review:** _____

Following are our findings:

CC: Howard Pham
Region 5 TPO
Mail Code: SA-5J

Below is a summary of the out-of-control audits and the possible effects on the data for this case:

Twenty (20) water samples, numbered METFG8, H2-H8, J8-J9, K0-K1, L4-L5, L8-L9, M2-M3 and N2-N3 , were collected between December 2 and December 5, 2019. The lab received the samples on December 4 and December 5, 2019 in good condition. All samples were analyzed for metals. All samples were analyzed using the CLP SOW ISM02.4 analysis procedures and reviewed according to the January 2017 NFG for ISM02.4 (EPA-540-R-2017-001).

The inorganic analyses were performed using an Inductively Coupled Plasma-Atomic Emission Spectroscopy (ICP-AES) procedure.

1. HOLDING TIME:

No defects were found.

2. CALIBRATIONS:

No defects were found for the calibrations.

3. BLANKS:

No defects were found for the preparation blank or ICB/CCBs.

No samples were identified as field blanks.

4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE AND LAB CONTROL SAMPLE:

No defects were found for matrix spike or laboratory control samples.

5. LABORATORY AND FIELD DUPLICATE:

No defects were found for the laboratory duplicate samples.

METFH6/H7 and METFL4/L5 are field duplicates. No defects were found for the field duplicate samples.

6. ANALYSIS:

No defects were found for the serial dilution or ICS samples.

7. SAMPLE RESULTS:

The following inorganic samples have analyte concentrations reported above the method detection limit (MDL) but below the quantitation limit (CRQL).

Results are qualified "J".

Arsenic

METFG8, METFH3, METFH8, METFJ8, METFL4, METFL5, METFL8,
METFM2, METFM3

All data, except those qualified above, are acceptable.

EXES ISM02.4 Data Qualifier Sheet

<u>Qualifiers</u>	<u>Data Qualifier Definitions</u>
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting Quality Control (QC) criteria. The analyte may or may not be present in the sample.
UJ	The analyte was analyzed for, but not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

Regional Transmittal Form

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V**

DATE: 01/06/2020

SUBJECT: Review of Data
Received for review on 12/17/19

FROM: Timothy Prendiville, Supervisor, Chief (SR-6J)
Superfund Contract Management Section

TO: Data User: Jacobs
Email address: kaitlin.ma@jacobs.com

LEVEL 3 DATA VALIDATION

We have reviewed the data for the following case:

SITE NAME: Outboard Marine Corp. (IL)

CASE NUMBER: 48662 **SDG NUMBER:** METFM1

Number and Type of Samples: 15 waters (metals)

Sample Numbers: METFG5-G6, H9, J0, J5-J7, K8-K9, L0, M1, M4-M5, M8-M9

Laboratory: Chemtex **Hrs. for Review:** _____

Following are our findings:

CC: Howard Pham
Region 5 TPO
Mail Code: SA-5J

Below is a summary of the out-of-control audits and the possible effects on the data for this case:

Fifteen (15) water samples, numbered METFG5-G6, H9, J0, J5-J7, K8-K9, L0, M1, M4-M5, M8-M9, were collected between December 4 and December 6, 2019. The lab received the samples from December 5 through December 7, 2019 in good condition. All samples were analyzed for metals. All samples were analyzed using the CLP SOW ISM02.4 analysis procedures and reviewed according to the January 2017 NFG for ISM02.4 (EPA-540-R-2017-001).

The inorganic analyses were performed using an Inductively Coupled Plasma-Atomic Emission Spectroscopy (ICP-AES) procedure.

1. HOLDING TIME:

No defects were found.

2. CALIBRATIONS:

No defects were found for the calibrations.

3. BLANKS:

No defects were found for the preparation blank or ICB/CCBs.

No samples were identified as field blanks.

4. MATRIX SPIKE/MATRIX SPIKE DUPLICATE AND LAB CONTROL SAMPLE:

No defects were found for matrix spike or laboratory control samples.

5. LABORATORY AND FIELD DUPLICATE:

No defects were found for the laboratory duplicate samples.

METFJ6/J7 are field duplicates. No defects were found for the field duplicate samples.

6. ANALYSIS:

No defects were found for the serial dilution or ICS samples.

7. SAMPLE RESULTS:

The following inorganic samples have analyte concentrations reported above the method detection limit (MDL) but below the quantitation limit (CRQL).

Results are qualified "J".

Arsenic

METFG5, METFG6, METFJ0, METFK8, METFK9, METFL0, METFM1,
METFM4, METFM5, METFM8, METFM9

Iron

METFJ0

Manganese

METFM4

All data, except those qualified above, are acceptable.

EXES ISM02.4 Data Qualifier Sheet

<u>Qualifiers</u>	<u>Data Qualifier Definitions</u>
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting Quality Control (QC) criteria. The analyte may or may not be present in the sample.
UJ	The analyte was analyzed for, but not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.